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MANUAL

OF THE

HIGH SCHOOL BOARD

OF

NORTH DAKOTA

AUGUST 1907

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A MANUAL FOR THE USE

OF THE

STATE HIGH SCHOOLS

OF NORTH DAKOTA

Published by the High School Board

August, 1907

MEMBERS OF THE HIGH SCHOOL BOARD

JOHN BURKE, *Governor of the State, ex-officio*.....PRESIDENT
W. L. STOCKWELL, *Supt. of Public Instruction*.....SECRETARY
WEBSTER MERRIFIELD, *Pres. State University*.....EXAMINER

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PREFACE

This manual is published for the use of high school officers, superintendents, principals and teachers. Its purpose is to state conditions of classification, rules governing examinations and courses of study, and to indicate briefly the amount and character of work required in each subject. It is hoped that high school officers, superintendents, principals and teachers will give this manual careful consideration and conform the work of the schools under their charge to this manual, which will supersede all other circulars and letters of instruction from the high school board.

W. L. Stockwell,
Secretary.

Bismarck, August 20, 1907.

MANUAL OF HIGH SCHOOL BOARD

I. STATUTORY PROVISIONS

[Revised Codes of 1905 as amended in 1907.]

ARTICLE 25—HIGH SCHOOL BOARD.

§ 1031 High School Board. The governor, superintendent of public instruction and president of the state university are hereby constituted a board of commissioners on preparatory schools for the encouragement of higher education in the state. Said board shall be called the "High School Board," and shall perform the duties and have and exercise the powers hereinafter mentioned.

§ 1032 Students Classified. Any public graded school in any city or incorporated village or township, organized into a district, under the township or district system, which shall give instruction according to the terms and provisions of this article and shall admit students of either sex from any part of the state without charge for tuition, shall be entitled to be classified as a state high school, and to receive pecuniary aid as hereinafter specified; provided, however, that no such school shall be required to admit nonresident pupils unless they pass an examination in orthography, reading in English, penmanship, arithmetic, grammar, modern geography and the history of the United States.

§ 1033. Requirements for Classification. The said board shall require of the schools applying for such pecuniary aid or prerequisite to receiving such aid, compliance with the following conditions, to-wit:

1. That there be regular and orderly courses of study, embracing all the branches prescribed by the said board for the first two years of the high school course.

2. That the said school receiving pecuniary aid under this article shall at all times permit the said board of commissioners, or any of them, to visit and examine the classes pursuing the said preparatory courses.

§ 1034. Schools visited once each year. What schools to receive state aid. Appropriation. The high school board shall cause each school receiving aid under this article to be visited, at least once each year, by a committee of one or more members, or by some person designated by the high school board, who shall carefully inspect the instruction and discipline of the preparatory classes and make a written report on the same immediately; provided, that no money shall be paid in any case until after such report shall have been received and examined by the board and the work of the school approved by the board. The said board shall receive applications from such schools for aid as hereinafter provided, which applications shall be received and acted upon in order of their reception. The said board shall apportion to each of said schools, which shall have fully complied with the provisions of this article, and whose application shall have been approved by the board, the following sums, to-wit: Eight hundred dollars each year to each school maintaining a four years' high school course and doing four years' high school work. The sum of five hundred dollars each year to each school having a three years' high school course and doing three years' high school work. The sum of three hundred dollars each year to each school having a two years' high school course and doing two years' high school work; provided, that the monies so appropriated to any high school shall be used to increase the efficiency of the high school work; provided, that not more than forty per cent of the money appropriated must be used in any one year for libraries, laboratories and other apparatus and equipment; provided, further, that the total amount of apportionment and expenses under this article shall not exceed forty-five thousand dollars in one year. The sum of forty-five thousand dollars is hereby appropriated annually for the purpose of this article, to be paid out of any monies in the state treasury, not otherwise appropriated, which amount, or so much thereof as may be necessary, shall be paid upon the itemized vouchers of said board, duly certified and filed with the state auditor; provided, however, that in case the amount appropriated and available under this article for the payment of aid to such schools shall in any year be insufficient to apportion each of such schools as are entitled thereto the full amount intended to be apportioned to the high schools of the various classes, then, in such case such amount as

is apportioned and available shall be apportioned pro rata among the schools entitled thereto.

§ 1035. No Compensation. Expenses. The members of the board shall serve without compensation, but the actual and necessary expenses of the board, any clerical officer of the board, or any examiner shall be paid in the same manner as those of state officers; provided, that the total expense, including the apportionmnt to the schools aforesaid shall not exceed forty-five thousand dollars in any one year.

§ 1036. Discretionary Powers. Assistant Examiner. The high school board shall have full discretionary power to consider and act upon application of schools for state aid and to prescribe conditions upon which said aid shall be granted, and it shall be its duty to accept and aid such schools only as will, in its opinion, if aided, efficiently perform the service contemplated by law; but in each county five schools complying with the prescribed conditions shall have a right to aid from this appropriation before aid may be granted to a sixth school in any county. Any school once accepted and continuing to comply with the law and regulations of the board made in pursuance thereof shall be aided not less than three years. The board shall have power to establish any necessary and suitable rules and regulations relating to examinations, reports, acceptance and classification of schools, courses of study and other proceedings under this article. Any assistant examiner appointed by the high school board as authorized by law shall be entitled to receive such compensation as the board may allow, not exceeding three dollars per day; provided, that no such compensation shall be paid to any person receiving a salary from the state or from any state institution.

§ 1037. Shall Keep Record. The said board shall keep a record of all the proceedings and shall make on or before the first day of December in each year a report, covering the previous school year, to the superintendent of public instruction, showing in detail all receipts and disbursements, the names and number of schools receiving aid, the number of pupils attending the classes in each, to which report they may add such recommendations as they may deem useful and proper.

II. RULES AND REGULATIONS

APPLICATION FOR CLASSIFICATION.

1. Candidates for classification shall make application to the board, through its secretary, on or before June 1 of each year, on blanks furnished by the secretary upon application.

2. These applications shall be filed by the secretary and considered by the board in the order of their receipt. Each application shall be accompanied by a full report of the high school.

3. Any school failing to comply with the law and regulations of the board made in pursuance thereof, shall be removed from the list of classified schools and may be re-entered only upon renewal of its application.

4. Schools applying for classification after all funds appropriated for aiding high schools are exhausted may be classified as state high schools without aid and be entitled to the same privileges of examination and certificates as free state high schools receiving aid.

III. CONDITIONS OF ACCEPTANCE

1. There must be a well organized graded school with a course of instruction of such graded school, corresponding substantially to the eight years' course of study prescribed by the Department of Public Instruction for common and graded schools.

2. Third class high schools shall have not less than four rooms or departments; second class high schools shall have not less than five rooms or departments; first class high schools shall have not less than six rooms or departments; provided that, under exceptional cases, the eighth grade may be included in the high school.

3. The minimum number of teachers in third class high schools shall be four, which is to include the principal; second class high schools six, including the principal, and one of the other five shall be an assistant high school teacher; and first class high schools seven, including the principal or superintendent; and no school shall be classified as a first class high school in which there are not employed two assistants, giving their full time to high school work. On and after September 1, 1908, there shall be required an assistant high school teacher in third class high schools, and the number

of assistant high school teachers in the second and first class school shall be increased by one.

4. The instruction in all state high schools shall be of a high order.

5. Each high school shall be provided with necessary recitation rooms, furniture, apparatus and library, to the end that the work of the schools shall be of the highest possible efficiency.

6. The school session shall consist of at least nine months each year.

7. The superintendent shall be provided with an office, and with assistance sufficient to allow him at least one-half of his time in the school hours for general supervision over the grades.

8. All schools accepting high school aid shall be required to keep such funds separate from the general fund, and said high school aid is to be used only for the following purposes:

Forty per cent for:

(a) Laboratory apparatus and supplies.

(b) Purchase of books for high school reference library.

(c) Maps, charts and globes for high school use.

And sixty per cent may be used for high school teachers' salaries.

The clerk of the school board of each school receiving aid shall submit to the high school board, not later than June 1 of each year, a detailed statement of all expenditures made during the year of money received from state aid for high schools.

9. The superintendent, high school principal and assistants in high schools of the first and second classes shall hold the B. A. or equivalent degree from some reputable college or university. Exceptions may, in special cases, be made by the high school board, but the superintendent, high school principal and assistants shall, in cases above excepted, be duly qualified by holding state life professional certificates. The high school board is always to be the judge of evidence upon which to make exception. Further, that the principal of a third class high school, if not the holder of a B. A. degree, or an equivalent degree, or of a life professional certificate, shall be a graduate of some reputable normal school, or shall have completed at least two years in some reputable college or university and shall present satisfactory credentials to the high school board.

10. Hereafter the high school board will classify no high school as first class in a district having an assessed valuation of less than $250,000.

11. The high school board will classify as first class no school paying less than $1,200 a year to its principal or superintendent; as second class no school paying less than $900 to its principal, and as third class no school paying less than $800 to its principal.

12. In all first class high schools the subjects of music and drawing shall be taught under the supervision of or by a special instructor or some teacher competent to supervise these subjects.

13. No school shall be classified b ythe high school board which has not an efficient heating and ventilating system.

IV. CLASSIFICATION OF SCHOOLS

All high schools accepted by the board shall be included in one of the following classes:

(a) High schools of the first class shall include all schools doing four years of work which have complied with the following conditions:

1. They shall have not less than thirty well prepared students and at least two assistant high school instructors. Commencing with September, 1908, three assistant instructors shall be required, one of whom may be instructor of music and drawing.

2. The schools shall have suitable and commodious quarters and shall have well established laboratory courses in three of the sciences named in the course of study prescribed by the high school board.

3. They shall afford instruction in all the required courses prescribed by the state high school board; provided, that no subject need be offered in a given year unless it is desired by at least four students.

4. They shall have an ample working library, including a sufficient supply of supplementary reading for each of the twelve grades.

(b) The second class shall include those schools in which the course extends through three years as explained under Program of Studies for High Schools, page 14, and comply with the following:

1. High schools of the second class shall have an enrollment of not less than twenty well prepared students and at least one assistant high school instructor. On and after September 1st, 1908, two assistant instructors shall be required, one of whom may be instructor in music and drawing.

2. Ample laboratory appliances for instruction in either botany or zoology and in either physics or chemistry for each student.

3. Inexpensive dissecting microscopes and at least one compound microscope for each two members of classes in either botany or zoology.

4. A selected historical and reference library adequate for the work in English literature and general history, and supplementary reading for the grades of the common schools.

(c) The third class schools shall include those that afford instruction in eight of the sixteen units of prescribed work. They shall possess:

1. An enrollment of not less than fifteen well prepared students, and on and after September 1, 1908, one assistant high school instructor.

2. Ample laboratory appliances for instruction in either botany or zoology.

3. An ample working library and a sufficient supply of supplementary reading for each of the ten grades.

V. CONDUCT OF THE SCHOOL

1. All pupils before admission to the high school shall pass a satisfactory examination in the work outlined in the course of study for the common schools.

2. Two completion examinations shall be offered each year in high school and common school branches to all classified schools; but high schools of the first class shall not be required to pass final examinations in all subjects named by the high school board, but they shall be examined in such subjects as the examiner may require, notice of the required examinations being given to all schools of this class at the same time, and not more than fifteen days before the date of examination; provided, that schools of this class may, in their discretion, hold final examinations in all subjects offered by the board upon the usual application to the examiner for questions. The examiner may, in his discretion, offer the examinations of the board to schools of three or more rooms, not classified but doing at least four units of high school work and giving promise, with encouragement, of doing, in the near future, the entire eight units requisite for classification. Other schools will not be entitled to take the examinations.

3. Certificates will be given by the examiner to the successful examinees in the several subjects passed. These certificates are accepted by the university, the agricultural college, the state normal schools, the state industrial school and the school of science in lieu of the usual entrance examinations.

4. Certificates will be given by the board to students who shall have completed fourteen, eleven and seven units of work respectively offered by schools of the first, second and third class. Beginning with the graduating class of 1910, these certificates will be given those students who accomplish the work required for sixteen, twelve and eight units of credit in the respective high schools.

5. The board of education of each state high school, at least a month before the close of the school year, shall report to the high school board the condition of such school—stating the number of students in the high school, the number of subjects pursued during the year, the number of pupils studying each subject, and the number graduating.

VI. PROGRAM OF STUDIES FOR HIGH SCHOOLS

CONSTANTS.

1. English, Course I.
2. English, Course II.
3. English, Course III.
4. Elementary Algebra.
5. Plane Geometry.
6. History, either general or ancient.
7. Advanced United States history, one-half year.
8. Civics, one-half year.
9. Physics.

ELECTIVES.

10. English, Course IV.
11. Latin I. Grammar.
12. Latin II. Caesar.
13. Latin III. Cicero.
14. Latin IV. Virgil.
15. German I.

16. German II.
17. Greek I.
18. Greek II.
19. French I.
20. French II.
21. Higher Algebra, one-half year.
22. Solid Geometry, one-half year.
23. English History.
24. Modern History.
25. Penmanship and Spelling, one-half year.
26. Bookkeeping, one-half year, or a full year.
27. Commercial Law, one-half year.
28. Commercial Geography, one-half year.
29. Stenography and Typewriting.
30. Political Economy.
31. Physiology, one-half year.
32. Meteorology, one-half year.
33. Physical Geography, one-half year.
34. Elementary Geology, one-half year.
35. Either Zoology or Botany.
36. Chemistry.
37. Pedagogy.
38. Senior review of arithmetic, one-half year.
39. Senior review of English grammar, one-half year.
40. Vocal music, one year, one-half credit.
41. Drawing, one year, one-half credit.
42. Agriculture, one-half year.
43. Manual training.
44. Common school courses.

NOTES.

1. All courses are to be pursued for a year except when otherwise specified. A course of study with five recitations a week, or the equivalent, counts as a unit.

2. Music and drawing must be offered in every high school, but students, individually, may elect to take these subjects or not to take them. Schools must also offer courses in the elective sciences as well as in physics and must be equipped for this work as specified under Classification of Schools, p. 12.

3. High schools of the first class are required to do sixteen (16) units of work; high schools of the second class, twelve (12) units, and high schools of the third class eight (8) units. High schools of the first class must include all the constants named in the preceding list; second class schools must include six units from the list of constants, among which shall be courses I. and II. in English and elementary algebra; third class schools shall include four of the constants, among which shall be Course I. in English.

Beginning with the classes graduating in 1910 students must complete the amount of work here named, and they may count music and drawing of they elect these subjects. The classes of 1908 and 1909 must complete fourteen units of work in the case of first-class high schools; eleven units in second-class schools and seven units in third-class schools, music and drawing not to be counted in this.

VII. RULES FOR CONDUCTING EXAMINATIONS

All superintendents, principals and teachers in the high school department, appointed to conduct examinations of the state examiner, are required to read the following rules to the class before beginning the examinations.

Examinations will hereafter be given subject to the following rules —which must be strictly followed:

1. Two examinations will be offered each year, beginning on the second Monday in January and on Friday of the third week in May.

If school opens the first Monday in September, and two weeks of vacation are allowed at Christmas time and one at Easter, these examinations will come the eighteenth and thirty-sixth weeks of school, which is the intention of the high school board.

The examinations in the several subjects will take place in the following order:

FIRST DAY.

English Grammar, eighth grade.
Latin grammar.
Vocal music.
Virgil.
Cicero.
Modern languages.

Senior arithmetic.
Senior grammar.
Commercial geography.

SECOND DAY.

Arithmetic, eighth grade.
Elementary Algebra.
Solid geometry and higher algebra.
Caesar.
Drawing.
Advanced United States history, high school.
Civics.

THIRD DAY.

Geography, eighth grade.
Physical geography.
Geology
Botany.
Zoology.
English I.
English II.
English III.
English IV.
Bookkeeping.
Stenography and typewriting.
Commercial law.

FOURTH DAY.

History of the United States, eighth grade.
General history or ancient history
Modern history.
English history.
Plane geometry.
Political economy.
Agriculture.
Chemistry.
Penmanship and spelling, high school.

FIFTH DAY.

Reading, spelling and penmanship, eighth grade.
Physiology, high school.
Physics.

English I.
Pedagogy.
Greek.
Manual training.

SIXTH DAY.

On this day must be taken all subjects which could not be taken by the whole class on previous days because of conflict.

It is to be understood that all the examinations set for any day may be taken either in the forenoon or afternoon. One, two or more classes may be examined in the forenoon and the remainder in the afternoon. No examinations will be given on Memorial day—and when Memorial day comes in examination week the examination will begin one day earlier.

2. All applications for questions, stating the subjects and number of question papers desired, must be made to the high school examiner at least fifteen days prior to the date set for beginning the examinations. High schools of the first class shall not be required to pass final examinations in all subjects named by the high school board, but they shall be examined in such subjects as the examiner may require, notice of the required examinations being given to all schools of this class at the same time, and not more than fifteen days before the date of examination; provided, that schools of this class may, in their discretion, hold final examinations in all subjects offered by the board upon the usual application to the examiner for questions. The examiner may, in his discretion, offer the examinations of the board to schools of three or more rooms, not classified but doing at least four units of high school work and giving promise, with encouragement, of doing, in the near future, the entire eight units requisite for classification. No examinations in common school subjects will hereafter be sent out except to schools which maintain state high schools.

3. The envelope containing the questions must be retained by the superintendent or principal in a safe place until the time appointed for examination, and under no circumsmtances shall the envelope be opened except in the presence of the class when seated and ready for work. The precise moment of the distribution of questions must be observed and announced to the class, as the examination proper begins at that time.

4. No more than *three hours* shall be allowed for an examination, and no examination shall be divided, nor shall any pupil be

allowed extra time, a second trial or to take the examination at any other time than that at which the class takes it.

5. The examination shall be conducted by the superintendent or the principal teacher in the high school department.

6. The order of examinations in subjects printed in *Italics* must not be changed under any circumstances.

7. Each candidate must be supplied with white legal cap paper, pen and black ink and will not be allowed to communicate with anyone except the examiner in charge during an examination, nor may he leave his seat until he has completed his work on the entire number of questions. In case of any communication the offender's paper must be thrown out.

8. No explanation whatsoever shall be made concerning the questions (not even to explain or call attention to a typographical error), and no teacher or other person shall be allowed to criticize or inspect the work of the pupils while in progress. Each pupil is to rely solely on his own judgment as to the meaning of every question, and any effort on the part of any pupil to give or obtain aid must be followed by instant dismissal from the room.

9. Should there be any typographical error, such as to make a question absurd, unintelligible or unsolvable, if students see the error, and make the necessary changes and answer the question correctly, they are to be allowed full credit in the regular manner, but if they do not see the mistake, and are thus unable to answer the question, it should be left out of account entirely in figuring up the credits, and the paper graded upon the basis of the credits allowed for the remainder of the questions.

10. The answers are to be written with *black ink* and not with *lead pencil,* and are to be arranged and numbered in the order of the questions. Special attention should be given to the general order, legibility and neatness, as well as correctness, of the work.

11. In mathematics, *the entire operation must be given. Mere results will be marked zero.* In the translations required in the language papers, no dictionaries or vocabularies must be used.

MARKING THE PAPERS.

12. The superintendent or principal shall examine and mark *in red ink* all the answers in each subject. In case the principal is unable to read all the papers he may be assisted by any of the teachers of the high school department appointed for that purpose. *Each answer* entitled to a definite number of credits *must be marked*

separately and not a mark given to the paper as a whole. The credits assigned should be reduced to a scale of one hundred and the grade entered on filing margin as "principal's mark." Papers falling below 65 per cent, or illegible or slovenly in appearance, must not be sent to the examiner.

SENDING PAPERS TO THE EXAMINER.

13. The papers in each subject, when marked, should be tied up, together with the class list, properly filled out and placed on the outside, so that the package will show, without being untied, the place, subject, etc. Strong rubber bands are preferable to twine or cord. The papers in all subjects should be tied together in one package, carefully wrapped and sealed, and sent by mail or express, charges prepaid, to the state examiner. If the package is very small it may be sent by mail.

14. The papers are to be sent to the examiner *within twelve days* from the day the examinations were appointed to begin. Papers sent after that time will not be received by the examiner.

15. The principal's certificate and schedule must be sent properly filled out and signed.

APPEAL FROM THE EXAMINER'S MARKINGS.

16. The appeals from the examiner's markings must be made within ten days after the receipt of the examiner's notice of results.

Address,

STATE HIGH SCHOOL EXAMINER,,
University, North Dakota.

VIII. SYNOPSIS OF WORK REQUIRED IN THE VARIOUS SUBJECTS.

ENGLISH.

The high school work in English has four objects in view, viz.:

1. It seeks to enable pupils to use the English language with clearness, fluency and elegance. An educated person who cannot express himself is of small value to the community. It is, therefore, necessary that schools should give instruction, not only in science, history, and the like, but also in the art of using words.

2. It seeks to give pupils an acquaintance with a carefully selected series of masterpieces in both prose and poetry. The works

assigned are illustrative of the different forms of composition, and the object of the study should be to enable the pupil to appreciate and enjoy good literature, both for its form and its content, and to give him standards of judgment to guide him in his future reading.

3. It seeks to give pupils some knowledge of the history of English and American literature, introducing them to the great periods and movements of literary progress, and to the lives, characters and works of the noble galaxy of literary men and women whose pens have made glorious our mother tongue. Some acquaintance with these great names is always assumed as a part of the intellectual equipment of an intelligent person, and this the third and fourth courses aim to give.

4. It seeks to train pupils in oral interpretation of literature. To this end, selections from the masterpieces assigned for class study should be read aloud in the class. The number and length of the selections so read must be determined by the teacher. Much depends upon the taste of the teacher and the class, and upon the amount of time required for other work; but the matter of oral interpretation must be kept in mind and as much time as possible given to it.

BOOKS FOR STUDY.

These books are to be thoroughly studied as to subject matter, form and structure. The students should also be prepared to answer questions on the leading facts in the periods in English literary history to which the prescribed works belong.

BOOKS FOR READING.

Only a general knowledge of the substance of these books is required. The form of the examination will usually be the writing of a paragraph or two on each of several topics, to be chosen by the candidate from a number given in the examination paper. The treatment of these topics is designed to test the candidate's power to clear and accurate expression, and the knowledge of the book will be regarded as less important than the ability to write good English.

I. ENGLISH—COURSE 1.

(a) Review of English grammar; three recitations a week for three months.

(b) Elementary English composition and rhetoric; an average of three recitations a week for six months. Letter writing. De-

scription and narration. Emphasize external forms of composition, spelling, punctuation, capitalization, paragraph structure, figure of speech based on likeness.

(c) Masterpieces: an average of two recitations a week for nine months.

METHODS SUGGESTED.

(a) The study of rhetorical theory in a text book.

(b) The study of rhetorical masterpieces as concrete illustrations of theory.

(c) Much practice in composition. Students pursuing this course should write during the year at least thirty or forty compositions of from one hundred to four hundred words each. The writing of an original composition upon an assigned topic will always constitute a part of the state examination, and much more weight be given to it than the mere statement of rhetorical rules.

MASTERPIECES FOR STUDY.

1. Burroughs' Sharp Eyes.
2. Dickens Christmas Carol.
3. Goldsmith's Deserted Village.
4. Gray's Elegy.
5. Hawthorne's The Great Stone Face, My Visit to Niagara, The Ambitious Guest, Old Ticonderoga, The Great Carbuncle.
6. Lowell's Vision of Sir Launfal, The Present Crisis, Freedom, To W. L. Garrison, Wendell Phillips, The First Snow-Fall, The Changeling, Aladdin.

MASTERPIECES FOR READING.

1. Cooper's Last of the Mohicans.
2. Poe's Gold Bug.
3. Warner's A-Hunting of the Deer, How I Killed a Bear, Lost in the Woods, Camping Out.

II. ENGLISH—COURSE 2.

(a) Advanced rhetoric and composition, two recitations a week. Review description and narration. Usage; diction; clearness; force; elegance; paragraphing; principles of versification; periodic, balanced, loose, long and short sentences; figures of speech. Themes in exposition and argumentation.

(b) Masterpieces, three recitations a week.

(c) Work in composition should be continued throughout the year. Many expository paragraphs should be written and several complete themes in exposition and argumentation. These themes should be carefully criticized by the teacher and returned. The re-writing of a theme is recommended in case the pupil is inclined to be careless.

MASTERPIECES FOR STUDY.

1. Arnold's Sohrab and Rustum.
2. Burns' The Cotter's Saturday Night, To a Mouse, To a Mountain Daisy, For A'That and A'That, Epistle to J. Lapraik, Highland Mary, To Mary in Heaven, My Heart's in the Highlands, Bruce to His Men at Bannockburn, Bonnie Doon.
3. Carlyle's Essay on Burns.
4. Macaulay's Milton.
5. Milton's Minor Poems and Sonnets.
6. The Merchant of Venice.

MASTERPIECES FOR READING.

1. As You Like It.
2. The Iliad, books 1, 6, 22, 24.
3. Scott's The Lady of the Lake.
4. Stevenson's Treasure Island.

III. ENGLISH—COURSE 3.

(a) History of English Literature, two recitations a week.

(b) Masterpieces, three recitations a week.

(c) Composition work. The essays or themes required during this year shall be biographical or critical in character. They should be based on the masterpieces studied. At least three each term should be required.

MASTERPIECES FOR STUDY.

1. Addison's De Coverly Papers.
2. The Ancient Mariner.
3. Burke's Conciliation.
4. Macaulay's Essay on Addison.
5. Macbeth.
6. Tennyson's In Memoriam.

MASTERPIECES FOR READING.

1. Byron's The Prisoner of Chillon, The Destruction of Sennacherib, Maid of Athens, Mazeppa.

2. De Quincey's Flight of a Tartar Tribe.
3. Eliot's Silas Marner.
4. Julius Caesar.
5. Scott's Ivanhoe.
6. Tennyson's The Coming of Arthur, Lancelot and Elaine, Guinevere, The Passing of Arthur.

IV. ELEMENTARY ALGEBRA.

Addition, Subtraction, Multiplication, Division, Factoring, Highest Common Factor, Least Common Multiple, Fractions and Fractional Equations, Simple Equations with One Unknown Number, Equations with Two or More Unknown Numbers, Involution and Evolution, The Simpler Processes of Radicals and Exponents (not Including Imaginary Expressions), Pure Quadratic Equations.

V. PLANE GEOMETRY.

As presented in the ordinary text books.

Care should be taken that the student gains not merely a superficial readiness in using the form of geometric proof, but also an insight into the underlying principles of the subject which will enable him to apply his knowledge rightly.

Varied examples involving numerical computation should be given, and occasional brief practice in drawing to scale will perhaps be found helpful.

Effort should be made through abundant work in original exercises and otherwise to develop in the student a prompt and independent facility in geometrical reasoning and proof, in constructions and in computation of problems involving mensuration.

HISTORY.

History should hold an important position in every well arranged high school curriculum. That history as a school study must always play a leading part in the training for American citizenship is one of the truisms of our time. No required subject has a closer and more practical bearing upon the education of our children and of our alien immigrant population. Co-ordinately with English, history serves to acquaint the foreigner with the institutions and government of the country of his adoption. To neglect either of these two fundamental subjects in the education of this class is to endanger the safety of the commonwealth.

History and literature as cultural subjects can hardly be considered separately, so intimately are they inter-related. Both appeal to the imagination and both aid us in recalling vividly the life of the past. From this point of view, history can do much for the student in giving him some insight into the realm of the ideal. History records all the greatest achievements of mankind, and as a means of transmitting the moral and spiritual stimulus of the past it has no equal among all the subjects on the school curriculum.

The required work in history for the high schools of the state is a year of general history or a year of ancient history and one-half a year in United States history. It is not necessary any longer to repeat the old arguments against a year's course in general history. The tendency of advanced teaching is wholly in the direction of substituting for the general history two or more less comprehensive blocks of history work, each of which is to occupy a year's time. The reasons for this concensus of opinion among our prominent educators can be seen from the following brief quotation taken from the report of the committee of seven on the study of history in schools: "We do not recommend a short course in general history because such a course necessitates one of two modes of treatment, neither of which is sound and reasonable. By one method, energy is devoted to the dreary and perhaps profitless task or memorizing facts, names of kings and queens, and the rise and fall of dynasties. * * * By the second method pupils are led to deal with large and general ideas which are often quite beyond their comprehension."

While it is not desirable to make any sudden alterations in any well established course, it should be borne in mind that the course in general history must speedily give way everywhere to some other course or courses more adapted to the needs of th high school pupils. The courses of ancient and English history make the most practicable substitute for the general history. It has the twofold advantage of giving a comprehensive view of history and at the same time a comparatively simple and unified picture of three great nations, the Greek, the Roman and the English.

VI. ANCIENT HISTORY.

The study of ancient history should begin with a brief sketch of the oriental nations in order to show how our civilization began in the east, and how these peoples affected the later nations of Europe. The Greek history should be more carefully studied. The principal

emphasis should be laid first, upon the making of the two leading states of Greece, Sparta and Athens; second, upon the achievements of the Greeks outside their own narrow land, as seen in their great colonizing movements, their wars with Persia and the effort of Athens to build up a world empire; and third, upon the conquests of Alexander and the period that followed in which Greek ideas dominated the whole eastern world.

The Roman history should be studied with a view to bring out the dominant elements in the character of the people, their party strife in the evolution of their constitution, the great period of territorial growth and conquest, and last and most important of all, the unification of the world by the Roman roads and bridges, the Roman legions and the Roman law. The era of the great migrations and the rise of the Frankish kingdom bridges the gap between Roman and English history, and prepares the way for the study of modern history.

In presenting the entire subject of ancient history, care should be taken by the teacher to bring out the essential unity of the whole period from the Pharaohs to Charlemagne. The use of original sources in good translations adds so much to the interest and appreciation of the pupil that no period should be studied without frequent use of quotations and references from such works. No teacher, for example, should consider Greek history at all adequately presented unless there have been frequent readings from the Iliad and the Odyssey, Herotodus, Thucydides, Xenophon and Demosthenes. Not only should the teacher use such material freely in class, but the pupils should be required to do some reading of their own, outside the class. Roman history, likewise, should be illumined from the pages of Plutarch, Livy, Cicero, Caesar, Tacitus and Pliny. These works can all be obtained in fair translations at little cost. Such outside material as this, if rightly used, will be the means of opening to the pupil a new field of literature as well as cultivating in him a taste for real history.

VII. ADVANCED UNITED STATES HISTORY.

HALF YEAR.

The method of presenting the work in United States history depends upon the place it holds in the high school course. It may be made a senior review or be taken up in the third year as advanced work. There are many reasons why the subject should

be left to the latter half of the course, but the determining factors in favor of the later time are the greater maturity of the student and the importance of the subject. A logical arrangement would seem to be the combining of both history and civics in a single year's work, dealing with the constitutional questions when they arise in the course of the national progress. The separate text in civics is used as before, but only in connection with the history and in its appropriate place. The objects to be attained in this years' work are training in citizenship and the power of independent thinking and reasoning which, it will be recalled, are the first two of the points made in favor of history study. And since our state superintendent has publicly announced that United States history is one of the two subjects upon which teachers are most poorly prepared, the need for a sound and thorough course in this subject is apparent to all.

But while United States history is perhaps the best subject for training in citizenship and unexcelled in developing the power of reasoning, yet it is not at all lacking in the cultural element. The imagination is certainly appealed to in every phase of our national development, the moral aspects of our history are constantly recurring and the powerful influence of example acts as a constant stimulus to every pupil. As a special feature of this side of American history is the rich literature which illustrates as nothing else can, the deep undercurrents of popular feeling in the great crises of our national life. The two subjects of history and English thus mutually reinforce each other at all points, especially along the lines in which each is strongest. This capital fact contains the solution of the many difficulties which beset the path of the teacher who honestly tries to present these two subjects as though they were as far asunder as mathematics and theology. When English and history are thus co-ordinated, each will profit by the change to become character forming subjects of the highest rank.

A brief review of the whole subject of United States history is expected in this course. It is obvious, however, that all periods can not be studied with equal care. The details of wars with their campaigns and battles should receive comparatively slight attention; while the emphasis should be laid upon the industrial and political growth of the nation. The study of the critical periods of our history under the articles of confederation; the discussion and adop-

tion of the constitution, and Washington's administration, during which many questions regarding the force and effect of this constitution were determined, should receive the most intensive study given to any part of the course.

REFERENCE WORKS IN HISTORY.

UNITED STATES HISTORY.

General References.

Doyle, English in America. Three volumes.
*Fiske, Beginnings of New England. Houghton, Mifflin & Co..... $ 2.00
Critical Periods in American History. Houghton, Mifflin & Co. 2.00
Schouler, History of the United States. Five volumes. Dodd, Mead & Co. 11.25
American History Series. Chas. Scribners Sons.
*Fisher, Colonial Era 1.00
*Sloane, French War and Revolution 1.25
Walker, Making of a Nation 1.00
Burgess, Middle Period 1.00
Civil War and Constitution. Two volumes 2.00
Reconstruction and Constitution 1.00
Epochs of American History. Longmans, Green & Co.
Thwaites' Colonies 1.25
Hart, Formation of the Union 1.25
*Wilson, Division and Reunion 1.25
Channing, Students History of United States. The Macmillan Co. 1.40
*McLaughlin, History of the American Nation. D. Appleton & Co.
*Mace, School History of the United States. Rand & McNally .. 1.00
*Channing, Short History of the United States. The Macmillan Co. .90
*Rhodes, History of the United States Since Compromise of 1850. Harpers. Five volumes, each 2.50
American Commonwealth Series. (State Histories.) Houghton, Mifflin & Co. Each 1.25
Bryce, American Commonwealth. The Macmillan Co.
*Parkman's Works, Little, Brown & Co. Twelve volumes, each.. 2.00
Lodge, Short History of English Colonies in America. Harpers ... 3.00
American Statesman Series, Houghton, Mifflin Co., each..... 1.25
Lecky, American Revolution. D. Appleton & Co. 1.50
Dodge, Birdseye View of Civil War. Houghton, Mifflin Co. 1.50

Source Books.

*Hart, American Hostory told by Contemporaries. The Macmillan Co. Four volumes, each 2.00
Johnson, Representative American Orations. Putnam's Sons. Four volumes, each 1.25
*American History Leaflets. Lovell & Co. 33 numbers each .... .10
*Old South Leaflets. D. C. Heath. Each ..... .05

*Books of especial value to schools.

Preston, Documents Illustrative of American History. Putnam's Sons. Five volumes, each 1.50
McDonald, Select Documents Illustrative of the History of the United States. The Macmillan Co. Two volumes, each.. 2.75
Ames, History Studies. Ainsworth & Co., each ..... .75
State Documents on Federal Relations. Longmans, Green & Co. 2.00
*Liberty Bell Leaflets, Christopher Sower Co., Philadelphia.
*Hart, Source Book of American History. The Macmillan Co. .... .60
*Higginson, Young Folks' Book of American Explorers, Longmans, Green & Co.

Books For Teachers.

Mace, Method in History. Ginn & Co. 1.00
Berrigan & Channing, Manual in History. Waterville, Minn.
Cromwell, Students' United States History Outline. Ainsworth & Co.
Report of the Committee of Seven. The Macmillan Co. ..... .50
Historical Sources in Schools. The Macmillan Co.

EUROPEAN HISTORY.

Munro, Syllabus of Mediaeval History, Department of History, University of Pennsylvania ..... .60
*G. B. Adams, Civilization During the Middle Ages. Chas. Scribners Sons 2.50
Duruy, History of Middle Ages. Henry Holt & Co. 1.60
Bryce, Holy Roman Empire, The Macmillan Co. 1.00
Emerton, Mediaeval Europe. Ginn & Co. 1.50
Thatcher & Schwill, Europe in the Middle Ages. Chas. Scribners Sons.
Munro & Whitcomb, Mediaeval and Modern History. D. Appleton & Co.
*G. B. Adams, Mediaeval and Modern History. The Macmillan Co.
*Schwill, Modern Europe. Chas. Scribners Sons.
Periods of European History, 477-1899. Eight volumes 12.00
Seignobos, Political History of Europe since 1814. Henry Holt & Co.
Munro, The Teaching of Mediaeval History. D. Appleton & Co.
Translations and Reprints from Original Sources. University of Pennsylvania. Six volumes, each 1.50

ENGLISH HISTORY.

Most of the above references can be used in this subject also.
Green, History of the English People. Harpers. Four volumes.. $ 10.00
*Short History, The Macmillan Co. 1.20
Epochs of Modern History. Chas Scribners Sons, each 1.00
(Eleven of the eighteen volumes deal with English history wholly.)
*Cheyney, Short History of England, Ginn & Co.
Tait, Analysis of English History. The Macmillan Co.

*Books of especial value to schools.

Gross, Sources and Literature of English History. Longmans, Green & Co.
Coman and Kendall, History of England. The Macmillan Co.
*Channing and Higginson, English History for Amercans. Longmans, Green & Co.
*Andrews, History of England, Allyn & Bacon.

ANCIENT HISTORY.

General References.

*Taylor, Origin of the Aryans. Chas. Scribners Sons.
*Sayce, Ancient Empires of the East. Chas. Scribners Sons.
Holm, History of Greece. The Macmillan Co.
*Mommsen, History of Rome. Chas. Scribners Sons.
Epochs of Ancient History. Chas. Scribners Sons. Eleven volumes, each ..... $ 1.00
Story of the Nation Series. Greece, Rome, Carthage, Alexander's Empire, Chaldea, Egypt, Assyria, The Jews, Persia. Putnams' Sons. Each 1.50
Botsford, Greece. The Macmillan Co.
Rome, The Macmillan Co.
Bury, History of Greece. The Macmillan Co.
*Goodspeed, History of the Ancient World. Chas. Scribners Sons.
How and Leigh, History of Rome. Longmans, Green & Co.
Shuckburgh, History of the Greeks. The Macmillan Co.
History of Rome for Beginners. The Macmillan Co.
*Preston and Dodge, Private Life of the Romans. Leach, Shewell & Sanborn.
Kiepert, Atlas of the Ancient World. Leach, Shewell & Sanborn.. 2.00
Labberton, Historical Atlas, Townsend MacCoun.
Excellent Maps for Ancient History. Rand & McNally.

Source Books.

Homers' Poems, Iliad by Lang, Leaf and Meyer.
Odyssey by Butcher and Lang. The Macmillan Co.
Herodotus, Thucydides, Xenophon, Caesar, Cicero, American Book Co. Each volume ..... $ 1.00
Demosthenes, Harpers.
Plutarch, four volumes. The Macmillan Co.
Trial and Death of Socrates by Plato. The Macmillan Co. ..... .80
Livy, Harpers.
Polybius, The Macmillan Co. Two volumes.
Botsford, Elementary Source Book for Greece and Rome. The MacMillan Co. ..... .90
Munro, The Source Book of Roman History. D. C. Heath & Co.

*Books of especial value to schools.

VIII. CIVIL GOVERNMENT.

HALF YEAR.

The pupils should obtain a knowledge of actual government, as well as a knowledge of the structure or framework of government. General impressions should not be allowed to take the place of actual information, a peculiar danger in this study.

The subject should be treated broadly, giving a large proportion of the time to a general treatment of national and state governments, such as is found in James and Sanford's "Government of State and Nation," (Scribner), Ashley's "American Government" (Macmillan), and other good texts.

From two to four weeks should be given to North Dakota civics. A thorough study should first be made of the framework of the government. This will be based on a careful reading of the important parts of the Enabling Act and of the state constitution. County and city or town government may then be studied and a few of our most important laws like those pertaining to prohibition and to elections may receive some attention. This work should be made concrete. Let the teacher keep a scrap book in civics, filing therein newspaper clippings, pictures, reports, sample Australian and primary election ballots, and other materials illustrating the various branches of government in action. For example, illustrate the work of the board of county commissioners by extracts from their published proceedings.

Information will be found in the following: (1) North Dakota Blue book, issued by Secretary of State, Bismarck, N. Dak., sent free on application. This contains the Enabling act, constitution of North Dakota and the United States, and much valuable statistical material covering every branch of state government.

(2) North Dakota Code.

(3) Woods' little book on "Civil Government for North Dakota."

Pupils should be questioned upon current events of a political nature, and it will be the purpose of the state examiner to introduce at least one question upon current events in each set of questions sent out to the schools. Throughout the study of civil government the teacher should endeavor to impress upon the pupils the high responsibility as well as privilege of citizenship in a free state.

Among the standard reference books upon the library shelves should be the following:

1. Bryce, American Commonwealth.
2. McClain, Principles of Constitutional Law.
3. Johnston, American Politics.

IX. PHYSICS.

During the past few years there has been considerable discussion concerning the teaching of the subject of physics in the high school. A commission, consisting of committees appointed by the various science associations interested, has been attempting to determine what should be considered the minimum amount of work necessary in the high school course in physics. It has also arrived at conclusions which, if carefully considered by the teachers, will result in a great improvement in the high school course in physics. The preliminary reports of this committee have been used freely in formulating the requirements and making the suggestions which follow.

MINIMUM REQUIREMENTS.

1. The course in physics shall consist of at least 216 periods of forty minutes each of assigned work (i. e., 6 periods per week for 36 weeks).

2. The work shall consist of three closely related parts, viz., class work, illustrative experiments in class room, and laboratory work.

3. The class work shall include the study of at least one standard text. The following is a ist of the topics which must be covered:

Mass and weight.

Center of gravity.

Equilibrium of a body under the action of weight.

*Density and its measurement as grams per c. cm.

*Parallelogram of forces. Resultant of two forces in a plane.

Composition and resolution of forces. Conditions for equilibrium for translation.

Pressure in free gases due to weight; atmospheric pressure; barometer.

*Pressure in a confined gas due to its elastic force. Boyle's Law.

*Pressure in liquids with a free surface due to gravity; varying depth, density, shape of vessel.

*Balanced forces in liquids. Buoyancy. Archimedes' principle.

*Pressure in confined liquids. Hydraulic press.

*Uniform linear velocity and its measurement in ft, per sec. and cm. per sec.

*Uniform acceleration as the rate of change of velocity, and its measurement in ft. per sec. and in cm. per sec. each sec.

*Freely falling bodies—constant acceleration.

*Relations among unbalanced force, mass and acceleration in uniformly accelerated linear motion. Newton's second law.

Mass in proportional to weight—shown by the fact that the acceleration is the same for all bodies.

*Action and reaction. Momentum conserved. Newton's third law.

*Work as unbalanced force times distance and its measurement in foot pounds and gramcentimeters.

Energy measured by work. Potential and kinetic methods of measuring energy. Conservation of mechnical energy.

The law of machines; the work obtained not greater than the work put in. Inclined plane, pulleys, wheel and axle, lever.

*Efficiency of machines, and its measurement as the ratio of the work obtained to the work put in.

*Production of rotary motion. Measurement of moments by the product of force times arm. Levers.

General condition for equilibrium for both translation and rotation.

Conversion of mechincal energy into heat.

Heat a form of energy.

Conversion of mechanical energy into heat energy by friction, compression of gas, etc.

Expansion and its uses. Thermometers; Fahrenheit and Centigrade scales.

Expansion of air; Charles law. Absolute scale.

Heat quantity; measured in calorins.

*Specific heat.

Mechanical equivalent of heat.

*Evaporation. Heat of vaporization of water.

Relation between pressure of saturated vapor and boiling point.

Relative humidity of the atmosphere. Dew point, clouds and rain.

*Fusion and solidification. Heat of fusion of ice.

Production of artificial cold, freezing mixture, ice plants.

Qualifying motions of operation of steam engines, turbines, gas engines and heat engines.

Conservation of energy.

Heat transference by conduction and convection. Conductors and non-conductors.

Heat transference by radiation.

Heating and ventilation of buildings.

Qualitative description of transfer of energy by waves. Water waves.

*Wave length and period of waves. Velocity of wave is measured by the product of the wave length and the number of vibrations per second.

Longitudinal and tranverse waves.

The origin and transmission of sound in air and other media.

*Velocity of sound waves in air by direct experiment.

Reflection of sound; echo, reverberation.

Natural period of vibration. Tuning forks. Pitch and period.

Interference; beats.

Stationary waves on strings and in air columns.

Overtones; quality.

*Relation between the wave length of the fundamental tone and the length of the vibrating string or air column. Also relation between fundamental and overtones.

Resonance. Equality of natural and impressed periods.

*Velocity of sound by resonance.

The musical scale.

Light a form of energy.

Rectilinear propagation of light. Pinhole camera.

Metallic reflection and its law. Image in a plane mirror. Diffuse reflection.

Refraction and its laws.

Prisms and dispersion. Spectra.

*Lenses, concave and convex. Principal focus. Conjugate foci. Graphical method of finding size and position of images (using "rays").

The eye. Apparent size of objects and the visual angle. Spectacles, how they fulfil their purpose.

Method of increasing the visual angle by telescope, microscope, and opera glass.

Ordinary colors depend upon selective absorption; color vision.

*Photometry. Law of inverse squares.

The velocity of light.

Magnetic attractions and repulsions. Magnetic substances.

Field of force about a magnet with filings.

The earth a magnet.

Electricity by friction; opposite charges; attractions and repulsions.

Conductors and insulators.

Charging by induction or influence.

Electric change by chemical action. Poles of a cell.

Simple galvanic cell. Polarization.

Electrolysis. Definition of the ampere. Electroplating.

Heating effects. Resistance. Definition of ohm.

*Ohm's law. Definition of the volt.

Power measured by the product of volts times amperes. Meaning of the kilowatt-hour and its equivalent in horse-power-hour.

Magnet produced by a current—electro-magnet.

Current produced by a magnet, current produced by another current—induced current.

Simple alternator. Commutator. Direct current dynamo.

Induction coil. Transformer.

Telegraph, telephone.

The required units are, foot, inch, centimeter, meter, kilometer, second, pound (weight), foot-pound, horse-power, gram, gram-weight, gram-centimeter, kilogram, calorie, ampere, volt, ohm, watt, kilowatt.

The topics which are marked with a (*) are those in which the student should solve concrete problems.

The teacher should *not* follow the order of the topics as given; the order given in the text used is preferable.

4. At least two periods per week should be devoted to laboratory work, and these periods should be consecutive. Whether or not two periods are necessary for an experiment depends upon the amount of written work required in the laboratory as well as upon the character of the experiment itself.

5. In the laboratory the student shall perform at least 36 individual experiments and keep a careful notebook record of them; 18 of these experiments should be quantitative.

Each of the 18 should illustrate an important physical principle and no two should illustrate the same principle. In no case

should an experiment be selected which occupies more than two periods. Emphasis should be laid upon the conclusions to be derived and the discussion of the important features of the experiment. From 12 to 14 of the experiments should be in mechanics, and the remainder should be divided in approximately equal numbers among heat, electricity, sound and light. The selection of the experiments should be upon the most important topics as given above.

TEXTS, LABORATORY MANUALS AND APPARATUS.

Texts.—All the texts give more than need be studied in fulfilling the minimum requirements. The following texts, arranged in alphabetical order, will be found satisfactory:

Andrews and Howland, Elements of Physics, Macmillan Co.
Carhart and Chute, High School Physics, Allyn and Bacon.
Coleman, Elements of Physics, D. C. Heath & Co.
Crew, Elements of Physics,, Macmillan Co.
Culler, Text Book of Physics, J. B. Lippincott Company.
Henderson & Woodhull, Elements of Physics, D. Appleton & Co.
Hoadley, A Brief Course in Physics, American Book Co.
McMullen, Forty Lessons in Physics, Henry Holt & Co.
Mann & Twiss, Physics, Scott, Foresman & Co.
Millikan & Gale, A First Course in Physics, Ginn & Co.
Sanford, Elements of Physics, Henry Holt & Co.
Slate, Physics, Macmillan Co.
Wentworth & Hill, A Text Book of Physics, Ginn & Co.

Manuals.—*A* few of the texts already cited contain also the laboratory instructions. These, named by authors, are Andrews and Howland, Henderson and Woodhull, Hoadley, and Sanford.

The laboratory manuals which will be found satisfactory are as follows:

Ayers, Laboratory Exercises in Elementary Physics, D. Appleton & Co.
Cheston, Dean & Timmerman, American Book Co.
Chute, Physical Laboratory Manual, D. C. Heath & Co.
Coleman, Physical Laboratory Manual, American Book Co.
Crew and Tatnall, Laboratory Manual of Physics, Macmillan Co.
Millikan and Gale, A Laboratory Course in Physics, Ginn & Co.
Nichols, Smith and Turton, Manual of Experimental Physics, Ginn & Co.

Twiss, Laboratory Experiments in Physics, Scott, Foresman & Co.

Apparatus.—One of the most essential features of a physical laboratory equipment is the one most often omitted, i. e., tools and a small space for shop purposes. An article on this subject by J. P. Naylor will be found in School Science and Mathematics, June, 1905, p. 439. He shows how a fairly good equipment including a good working bench, can be purchased for about $60.00, and that by adding $85.00 more one can be well prepared for working in metals likewise. Space does not permit the presentation of the many excellent reasons for making the purchase of a shop equipment. It should be enough to say that it is the universal experience that the shop not only adds greatly to the efficiency of the instruction, but it also pays for itself many times over.

It is true that but few schools can afford ample space for a shop, but on the other hand practically all can acord the purchase of a few tools.

In the purchase of laboratory equipment it should be remembered that the preference ought always to be in favor of apparatus which is as simple as possible. Great accuracy is not the aim of the laboratory and consequently the purchaser should not attempt to secure apparatus of precision. The equipment for quantitative work should permit the obtaining of fair results, and the teacher ought to insist that the student be as accurate in his measurements as is possible with the apparatus.

Inasmuch as the list of apparatus necessary to perform the 36 experiments varies somewhat with the list of experiments, no detailed account of "necessary" apparatus will be given here. Moreover, a teacher ought not to be content unless he has sufficient apparatus to perform many illustrative experiments in the class room. To enumerate the desirable apparatus for this purpose is quite impracticable.

When making the vrst purchase for a laboratory, the teacher is advised to select first the text and manual to be used. The text will give many illustrative experiments for the class-room and the laboratory manual will describe the apparatus for the laboratory. The teacher can then decide upon the apparatus needed for the class room and the laboratory. The equipment necessary for the 36 experiments alone will probably not exceed $160.00, but this sum does not in-

clude the expenditures for illustrative experiments to be used in the class room, and these experiments are of very great importance to the work.

The following named houses will be glad to furnish catalogues:

Central Scientific Co., Chicago, Ill.

C. H. Stoelting & Co., Chicago, Ill.

Wm. Gaertner & Co., Chicago, Ill.

Columbia School Supply Co., Indianapolis, Ind.

Arthur H. Thomas Company, Philadelphia, Pa.

Eberbach & Son Company, Ann Arbor, Mich.

L. E. Knott Apparatus Co., Boston, Mass.

These catalogues, in addition to furnishing prices, will give the teacher many valuable suggestions.

X. ENGLISH—COURSE 4.

(a) History of American Literature, two recitations a week.

(b) Masterpieces, three recitations a week.

(c) Composition work in course 3.

MASTERPIECES FOR STUDY.

1. Aldrich's Baby Bell, Alec Yeaton's Son, Piscataqua River, The Little Violinist, Our New Neighbors at Ponkapog.

2. Bryant's Thanatopsis, To a Waterfowl, Song of Marion's Men, The Green Mountain Boys, The Yellow Violet, To the Fringed Gentian, The Planting of the Apple Tree, A Forest Hymn, The Food of Years, The Little People of the Snow.

3. Emerson's Compensation and American Scholar.

4. Higginson's The Procession of the Flowers, April Days, Water Lillies.

5. Lincoln's First Inaugural Address, Second Inaugural Address, Gettysburg Speech, The Emancipation Proclamation.

6. Poe's Raven and The Bells.

7. Taylor's Lars.

8. Webster's First Bunker Hill Oration, and Adams and Jefferson.

MASTERPIECES FOR READING.

1. Franklin's Poor Richard's Almanac.

2. Hawthorne's House of the Seven Gables or The Marble Faun.

3. Lodge's Life of Webster. (American Statesman Series.)

4. Parkman's La Salle.

5. Thoreau's The Succession of Forest Trees, Wild Apples, Sounds.

6. Views Afoot, Bayard Taylor.

7. Warner's My Summer in a Garden.

LATIN.

Pupils should be held strictly to the use of clear idiomatic English in their translations, though they should be led from the start to notice carefully the Latin order of words and to comprehend the thought in that order.

In the reading of the Latin text the teacher should see not only that each word is correctly pronounced but also that the words are properly grouped. He should strive to teach intelligent, expressive reading. The Roman method of pronunciation should be used.

XI. LATIN—1.

FIRST YEAR.

Latin Grammar and Easy Latin Prose.

As the work of this year is fundamental, it is of the utmost importance that it be accurate and thorough. The aim should be the acquisition of a vocabulary of a few hundred words, a thorough mastery of the regular and most common irregular forms, and a firm grasp of the more usual constructions. To accomplish this, constant review, oral and written, is necessary. Therefore, when the declensions, the conjugations and comparisons have been studied, there should be frequent practice in the declensions of nouns, pronouns and adjectives, in the conjunction of verbs, and in the comparison of adjectives and adverbs. Much of this can be done in connection with the work in composition, the pupil being asked to write a sentence on the board and to decline a noun or pronoun and give a synopsis of a verb in the sentence. All long vowels should be marked in all written work. After the first two or three lessons, translation, oral and written, from Latin into English, and from English into Latin should form an important part of every recitation. Nor should the teacher restrict himself to the sentences in the text book; he should compose a large number himself, making repeated use of those words and constructions which it is most necessary for pupils to know. Word formation should receive some attention.

XII. LATIN—2.

SECOND YEAR.

The first four books of Caesar's Gallic War, or selections from Ceasar equivalent in amount to two books and selections from other prose, such as Fables, Viri Romae, Eutropius and Nepos, equivalent to two more books.

1 Reading the Latin aloud and translation into clear, idiomatic English.

2. The syntactical relation of each word should be understood, and the thought fully comprehended; principal parts of all verbs memorized: frequent practice in the declension of nouns, pronouns and adjectives, in the conjugation of verbs, and in the comparison of adjectives and adverbs. This grammatical work should receive great emphasis.

3. The life of Caesar; the geography of the country; the organization of the Roman army, and the Roman art of war; all other subjects necessary for an understanding of the text read.

4. A careful, thorough review of the forms and word-formation should be made, and a systematic study of syntax should be begun.

5. Latin composition at least once a week. Sight reading. Memorizing of noteworthy passages.

XIII. LATIN—3.

THIRD YEAR.

Cicero's orations in Catalinam, De Imperio Pompei, and Pro Archia. If the time be insufficient to read all four of the orations against Catiline, the third may be omitted, but in that case the teacher should either translate it or summarize its contents for the class.

1, 2, and 5 as in the second year.

3. The life of Cicero; the history of his time; Roman oratory; Roman government; all other subjects necessary for an understanding of the text read.

4. The systematic study of syntax continued.

6. A careful study of the structure of each oration, but especially of the De Imperio Pompei.

XIV. LATIN—4.

FOURTH YEAR.

The first six books of Vergil's Aeneid.

1, 2 and 5 as in the second year. The composition work this year need not be based on Virgil, but may be a continuation of the work done with Caesar and Cicero.

3. The life of Vergil; all subjects of a geographical, archaeological, mythological or other nature necessary for an understanding of the text read.

4. A study of the poetic forms and constructions met in the text.

6. A study of the structure of the Dactylic Hexameter and careful attention to the correct reading of it.

XV. GERMAN—1.

FIRST YEAR.

The pupils should acquire a correct pronunciation; facility in forming simple German sentences; the essentials of German grammar. The instructor should give special attention to the training of the eye, the ear and the organs of speech.

Recommended for conversation and elementary grammar:

Schmitz's Elements of the German Language, first sixty lessons.

For a first German reader:

Mueller and Wenckebach's "Gluck Auf."

Joynes-Meissner's German Grammar, for reference.

XVI. GERMAN—2.

SECOND YEAR.

The pupils should get practice in translating from German into idiomatic English, and in reading German smoothly and with expression.

Conversation:

Schmitz's Elements completed.

Grammar:

Joynes-Meissner's Part I. complete, and chief rules of syntax, Part II.

Reading:

Schiller—DerNeye als Onkel. Storm's Immensee.

J. H. Hillard—Aus Dem Deutschen Dichterwald. First sixty poems. Omitting Nos. 3, 8, 15, 25, 36, 39, 43, 56, 57, 59.

Five selected poems for memorizing.

XVII. GREEK—1.

XVIII. GREEK—2.

XIX. FRENCH—1.

XX. FRENCH—2.

No synopses of these subjects are given. Schools offering any of these courses may obtain information about the requirements by applying to the examiner ot the high school board.

XXI. HIGHER ALGEBRA.

HALF YEAR.

Theory of Exponents (Positive, Negative, Zero and Fractional), Radicals and Radical Equations including Imaginary Expressions, Quadratic Equations and Simultaneous Quadratics, Inequalities, Ratio, Proportion, Arithmetical Progression, Geometrical Progression.

N. B.—A portion or all oi the topics here enumerated are required for entrance to many colleges. Students preparing for college are therefore advised to take this course.

XXII. SOLID GEOMETRY.

HALF YEAR.

The course as given in the usual text books in solid geometry.

The suggestions given above for plane geometry may also be observed in teaching this subject.

XXIII. ENGLISH HISTORY.

The study of English history aids the pupil in cimpleting his picture of mediaeval times begun at the close of Roman history, and it enables him also to trace the progress of the world down to his own day. Moreover, English history is of special significance to an American student since it assists him in understanding his own history from a study of that of his immediate ancestors. As far as possible, the unity and separateness of English history should be dwelt upon so as to avoid the confusion sure to arise if the history of all other European nations is considered at the same time. Upon the teacher must rest the responsibility of presenting the contemporaneous world history so as not to break the continuity of the English history, but at the same time to give the broader view without confusion or loss. The use of original materials to interpret and amplify the text is doubly important here, and the abundance of cheap reprints of the principal documents, reports and essays makes it easy for a wide-awake teacher to supply what is necessary.

Nor should one overlook the rich literature of poetry, prose and drama which so well expresses the varying stages of English development. Shakespeare is as much a part of English history in the reign of Elizabeth as is Philip II. with his invincible armada, or Drake, Raleigh, Hawkins and the rest.

XXIV. MODERN HISTORY.

The study of modern history is left to be considered last because it is the most difficult subject of all, and because few schools are at present ready to do work of this kind. The more or less simple lines of Greek, Roman, English and United States history are far easier to follow for the average class than the more complex web of modern history. With the four preceding subbjects well in hand, modern history can be profitably studied, and indeed it is the logical termination of all the others. But to avoid the dangers already referred to by the report of the committee of seven, in connection with general history, modern history can best come as the culmination of several separate studies; and as generalization is the most difficult task for the student of history, so the subject of modern history should be attempted only when the necessary preliminary training has been carefully completed.

XXV. PENMANSHIP AND SPELLING.

HALF YEAR.

Very little if any writing should be done in copy books in the high school. In fact, if an instructor is qualified to put the copies on the blackboard and to direct the pupils in their practice, much better results may be obtained by the use of loose practice paper than with the copy book. The forearm, or "muscular" movement, should be cultivated, and for this purpose the teacher and pupils will find a great deal of helpful material in such publications as the Penman's Art Journal (published at 229 Broadway, New York), The American Penman (Published by the A. N. Palmer Co., Cedar Rapids, Iowa), and The Business Educator (published by Zaner & Bloser, Columbus, Ohio).

So many spelling books have been published that no attempt will be made to enumerate them further than to say that many schools have found that the texts published for business college use are quite helpful; such as Words, Their Spelling, Pronunciation, Definition and Application (published by the Gregg Publishing Co., Chicago),

Spelling, by H. T. Loomis (published by The Practical Text-Book Co., Cleveland, O.), and Modern Business Speller, by D. D. Mayne, (published by Powers & Lyons, Chicago).

The examination of the high school board will require a specimen of the pupil's handwriting and the spelling of difficult words in common use with special emphasis on those used in business.

XXVI. BOOKKEEPING.

ONE-HALF YEAR COURSE.

This course should include a thorough drill in the elements of bookkeeping and practice in the use of the more common books of accounting, such as the day book, journal, cash book, sales book, check book, ledger, bills receivable and bills payable book, and trial balance and statement book. Some single entry might be given, but most of the work should be done in double entry. Students should be required to fill out and become familiar with such business forms as invoices, notes, drafts, checks, receipts, statements of account, etc., and a system of instruction which requires these papers to be made out for the transactions entered in the books of account is to be preferred to one who does not require them.

This course should cover the work offered in such sets as any one of the following:

Commercial and Industrial Bookkeeping (inductive set, to Dec. 1st), published by Sadler-Rowe Co., Baltimore, Md. (A. C. McClurg & Co., Chicago, western agents).

Powers' First Lessons in Bookkeeping, published by Powers & Lyons, Chicago, Ill.

Modern Illustrative Bookkeeping (introductory course, with vouchers), Williams & Rogers Series, published by the American Book Co., Chicago.

Goodyear's Essentials of Bookkeeping, published by Goodyear-Marshall Publishing Co., Cedar Rapids, Iowa.

Or similar introductory sets published by F. H. Bliss Pub. Co., Saginaw, Mich., and the Ellis Pub. Co., Battle Creek, Mich.

Any of these firms will be glad to furnish complete information in regard to their courses upon request.

FULL YEAR COURSE.

The full year course in bookkeeping should include, in addition to the work outlined for the half-year course above, advanced work in bookkeeping and business forms, either by independent individual

sets for the pupils or by organizing the class into a community for business practice with some suitable guide for the transactions to be performed and the books to be kept. In the latter method care should be taken to hold the pupils strictly to the work in hand, and to a high standard in business forms and books of account, lest time be wasted in useless "dickering." All transactions should be carried out by correspondenue, thus reducing confusion to the minimum.

For this advanced work the folowing are suggested as suitable:

If the Inductive Set of Industrial and Commercial Bookkeeping, as suggested above, is used in the first half of the year, complete the first budget from December 1st, and then take the Wholesale and Retail Set, published by the same authors.

If the Powers & Lyons publications are used, The Complete Accountant might be substituted for the First Lessons in Business, thus providing a full year's work, or their Elementary Business Practice might be used to follow First Lessons in Bookkeeping.

If the Williams & Rogers series is used, The Complete Course in Modern Illustrative Bookkeeping could be substituted for the Introductory Course named above, or one of their business practice sets used to follow the Introductory Course.

In the Goodyear-Marshall series their Higher Accounting, or one of their sets in business practice, such as the Community Business Practice, will provide suitable work for the latter half of the year.

XXVII. COMMERCIAL LAW.

HALF YEAR.

"As a means of cultivating mental power and imparting the degree of information suggested, the study of the law has an appropriate place in schools and colleges. The experience of ten years strengthens the writer's conviction that the study is interesting to the pupil and helpful to him. Its extremely practical bearing on the affairs of everyday life affords a host of opportunities for those mutual discussions of teacher and pupil which are among the most fruitful experiences of the class room."—Introduction to White's Business Law.

The following texts are suggested:

The Essentials of Business Law, by Francis M. Burdick. (D. Appleton & Co.)

Business Law, by Thomas R. White. (Silver, Burdett & Co.)

Commercial Law, by D. Curtis Gano. (American Book Co.)

Elements of Commercial Law, by Edward W. Spencer. (Bobbs-Merrill Co., Indianapolis.)

Lyons' Commercial Law. (Powers & Lyons.)

Richardsons Commercial Law. (Sadler-Rowe Co., Baltimore.)

Commercial Law, by A. T. Hills. (The Practical Text-Book Co., Cleveland, O.)

Teachers will find some one of the more complete standard works on contracts very helpful in their preparation to teach this subject. Such books as the following may be purchased through any of the leading law book dealers: Bishop on Contracts, Lawson on Contracts, Clark on Contracts, Harriman on Contracts. Bigelow on Bills and Notes (student edition), Mechem on Agency, Mechem's Elements of Partnership, and Benjamin's Principles of Sales, would also add greatly to the teacher's library.

The school library should contain a copy of the Revised Codes of North Dakota. In the study of negotiable paper the new Negotiable Instrument Law of this state should be freely used.

XVIII. COMMERCIAL GEOGRAPHY.

HALF-YEAR.

The subject of commercial geography is comparatively new to our schools. In the past three or four years the subject has been introduced into many of the high schools, and it is receiving considerable attention in the colleges and universities. Where the larger libraries and lecture rooms are available, the students are assigned special topics for research work and reports, and the stereopticon is used to illustrate lectures on the subject. In the larger cities of the east the commercial museum, containing specimens of the various materials of commerce (both in the raw and manufactured state), is becoming quite a feature in the high schools. With a little work the same idea can be carried out on a lesser scale in most any community. In many instances the materials may be gathered and arranged by the pupils, a plan greatly to their benefit. If there are any factories or mills near the school, excursions to these places to study the methods and gather specimens will be beneficial. In addition to the text-book work the student's note book is an important part of the course. Many of the leading newspapers and magazines contain articles bearing on this subject and pupils should be encouraged to gather this material and arrange it in proper form in their note books.

The text-book work should cover the material found in such texts as:

Adams's Commercial eGorgraphy (D. Appleton & Co.)

Redway's Commercial Geography (Charles Scribner's Sons.)

The Geography of Commerce, by Spencer Trotter (The Macmillan Co.).

Commercial Geography, by Gannett-Garrison-Houston (American Book Co).

Commercial and Industrial Geography, by John J. McFarlane (Sadler-Rowe Co).

The school equipment should include a large map of the United States and one of the world. The library should contain a copy of the Abstract of the Twelfth Census (Bureau of Census, Washington), the Yearbook of the Department of Agriculture, and the Statistical Abstract of the United States (Department of Commerce and Labor, Washington), the last two being published yearly.

Valuable books on this subject for the school library, or the teacher's private library, would be:

Chisholm's Handbook of Commercial Geography (Longmans, Green & Co).

The International Geography, by Seventy Authors, edited by H. R. Mill (D. Appleton & Co).

Commercial Raw Materials, by Charles R. Toothaker (Ginn & Co).

This book treats solely of the raw materials entering into all lines of commerce, and gives many maps showing the distribution of these materials over the world.

Introduction to the Study of Commerce, by F. R. Clow (Silver, Burdett & Co.). This book will suggest many topics for discussion and for special research work by the pupils.

Modern Industrialism, by Frank L. McVey (D. Appleton & Co).

General History of Commerce, by William C. Webster (Ginn Co.).

Stereoscopic views to illustrate this subject may be obtained from Underwood & Underwood, New York City; Keystone View Co., St. Louis, and the H. C. White Co., New York. If the school has a stereopticon at its disposal, the lantern slides may be obtained from the T. H. McAllister Co., 49 Nassau St., New York, and the Keystone View Co., St. Louis. Any of these companies will be glad to send you their special catalogues on this subject.

XXIX. STENOGRAPHY AND TYPEWRITING.

So much depends upon the system taught and the method of instruction in arranging this course that very little will be said about it here. Each of the leading systems has not only it stext-book but reading and writing exercise books and books for use in dictation. The examination will include questions covering the principles of the system, and exercises to be dictated to the class and transcribed by them either on the typewriter or by longhand.

In typewriting what is known as the "Touch" method is recommended. By this method the pupil learns to use all the fingers in operating the machine and keeps his eyes off the keys. Celluloid caps over the keys are an aid, but the student should be urged to keep his eyes on the copy and not on the keys. There are many good manuals for the teaching of the touch method, advertisements of which may be found in any of the shorthand magazines. Some work in tabulating, billing and title paging should be given in the advanced part of the course.

XXX. POLITICAL ECONOMY.

The course in political economy represents a year's work, five recitations a week.

The objects of this course are two-fold, viz:

1. It aims to create and stimulate in the pupil an intelligent interest in the economic life of his immediate neighborhood, his county, his state and nation. This is essential, since economic or material prosperity underlies any advance in civilization.

2. It aims to give the puil a mastery of a few sound economic principles. This, of course, will give the pupil the right attitude of mind and the proper approach to the serious economic problems that confront the citizen. Hence the larger part of the time should be devoted to a mastery of underlying economic principles which are now accepted as truth. This will furnish the pupil the needed learning for a serious and rational approach to such great questions as the tariff, money and banking, trusts, transportation, insurance, irrigation, labor and capital, etc. The solution of these questions must rest ultimately with the present pupil of the public school, hence no textbook or teacher can do more than point out carefully a few guiding principles. In short, the course must furnish sound principles, not short cut solutions.

GENERAL ECONOMICS—FIRST HALF YEAR.

This course should begin with a historical survey of the industrial stages through which modern society has passed. The four divisions of economic theory, consumption of wealth, production, exchange and distribution, should then be thoroughly mastered. This can be done only by frequent reviews, and by requiring the pupil to supplement statements in the text by numerous illustrations from his own observation and experience. The subject of public economics should then be taken up for at least two, or better, four weeks at the end of the first half year. This subject includes public expenditures and public income. Pupils should prepare a classified list of the expenditures and income for their own school district, or even county, city or state. Taxation should receive the most attention in this division of the subject.

The ordinary text-books on economics are prepared for college classes and are, therefore, too advanced for high school pupils. The following text, however, is designed exclusively for high schools, and will be found entirely satisfactory:

Ely and Wicker, Elementary Principles of Economics, published by Macmillan. Another good text is Bullock's Elements of Economics, published by Silver, Burdett & Co.

ECONOMIC HISTORY OF THE UNITED STATES.—SECOND HALF YEAR.

This course should cover the salient features of our own economic decvelopment as a nation, and should give the pupil a grasp of the principal facts of our industrial life. Concrete problems of economics may be emphasized, such as our tariff history, our system of banking, money and coinage, etc. Local topics may be studied. such as land tenure in North Dakota, size of farms, etc., transportation, immigration, etc.

There are a variety of books dealing with separate phases of the subject. There is one book covering the entire field fairly well, and it may well be made a text. It is Coman, the Industrial History of the United States, published by Macmillan. This could be profitably supplemented by collateral readings from the reference list below, or from other sources available to the pupil.

In the study of political economy, prominence should be given to questions of practical importance, such as those named above. The teacher should avoid controversy on questions that have become issues in current politics. A good method of treating such questions is to have the class choose leaders to debate them

pro and con, the debate finally being opened to the whole class. It is an excellent exercise to have members of the class occasionally read papers upon subjects previously assigned, such as the History of the Tariff, the National Banking Laws, the Coinage Laws, the Canadian Banking System, the New York Clearing House, Inheritance Taxes, the History of the Latin Monetary Union, etc. A good reference library is indispensable. Such a library will contain, in addition to standard elementary text books on political economy, the following:

REFERENCE TEXTS.

Andrews, Institutes of Economics.

Hadley, Economics.

Mill, Political Economy.

Adam Smith, Wealth of Nations.

Ely, Monopolies and Trusts, also Taxation in American States and Cities.

Lalor, Cyclopedia of Political Science, Economics and History (3 volumes).

Plehn or Daniel or Adams, Public Finance.

Scott or White, Money and Banking.

Dunbar, Theory and History of Banking.

Dewey, Financial History of the United States.

The World Almanac.

U. S. government publications. Several invaluable publications may be had for the asking. The high school cannot afford to omit these. Those likely to be of most service are: Statistical Abstract of the United States (issued annually by bureau of statistics); Reports of Commissioner of Labor (bi-monthly bulletins and large annual reports). Thousands of other reports are issued, and may be obtained for debates, class topics, etc.

XXXI. PHYSIOLOGY.

The study of physiology in the high schools of the state should be so outlined in the Manual as to present the scope of work to be done in the subject by the smaller or less fully equipped high schools. *All* are required to cover the *minimum* work outlined in quantity and quality, and the state examination questions will be gauged in scope to make no greater demands in knowledge than is called for in the outline herewith submitted as a guide.

The caution is urgently expressed not to make the subject a study of technicalities. On the contrary, let the instructor strive to link the subject very closely with the everyday life of the class—the homelife, the school life, the outdoor life. Avoid by every effort so treating the subject as to create the impression in the minds of the pupils that the subject of physiology is a book subject only. Let the work be physiology and hygiene rather than anatomy.

Each pupil in the class will keep a well ordered notebook in which he shall be required to keep a systematically written record, in descriptions and drawings neatly done, of the experiments performed and demonstrations or dissections wrought. These records must state clearly the purpose of the experiment, demonstration, or dissection, must describe the material and apparatus used, the procedure adopted to bring out the results sought, and the results themselves as learned thereby. Where an experiment is performed with apparatus, the well executed drawing of the apparatus as set up is to constitute a part of the record thereof, and these notebooks will be demanded by the inspector as partial evidence of the character of the work done in the subject. This book should contain at least twenty representative laboratory exercises.

Let the outline below be taken as the minimum.

THE CELL.

Kinds of cells; sizes and shapes of cells; cell walls, protoplasm, nucleus, nucleolus; irritability of protoplasm; why water is necessary to protoplasm; mobility of protoplasm; what is meant by cell structure; intercellular material; how cells multiply; how they get food and use it; one celled plant or animal; tissue as a group of like cells; different kinds of tissues; organs and functions; the complex individual body as composed of cells grouped into tissues and of tissues grouped into organs; division of labor and its advantages.

Suggestion: Microscopic examination of nitella or of a leaf of elodea will show circulating protoplasm very beautifully. Protococcus, amoeba, or paramecium will illustrate the one celled body. A little scrapings from the inner side of the lip will afford abundant view of the dead, flat cells of the outer skin.

STRUCTURE OF TISSUES.

The pupil can very easily grind down a wafer of bone shaft taken lingitudinally, by rubbing it over the face of a wetted whetstone under the fingers' end. When very thin, it will show the cell structure of bone when examined under the microscope.

GROSS STRUCTURE.

Study for periosteum and its very important functions, shaft, head, marrow both red and yellow; spongy texture of interior, specially at the enlarged ends; why the enlargements; composition of bone; joints; number of bones in body; naming the most important bones; shapes of; functions of; articulations; how nature mends broken bones.

Gross structure of muscle, showing fibers, perimysium, striated, non-striated, voluntary, involuntary, origin, insertion, contractility, tendon as continuation of the connective tissue about the muscle; uses and economy of tendons; degree of elesticity and ends served thereby; good examples of tendons; cartilage and its economy in the body mechanism; hygiene of muscular exercise and proper care of the body-muscle.

Suggestion: The study of the anatomy of the frog will afford excellent demonstration of the above work.

Study of the skeleton as an articulated whole to see the economy of that mechanism, as serving the desired ends to the welfare of the body.

THE TEETH.

The two sets of teeth compared; structure and composition of the teeth; hygiene of the teeth; comparative study of man's teeth with those of a few other well known animals; thus showing the adaptability of the teeth to the food getting purposes of different animals. Origin of the teeth in the body in their development in the individual.

FOOD.

Essentials of a food as such; energy and energy production; conservation and transformation of energy; heat production in the body; need of a variety of diet; carbohydrate foods, nitrogenous foods, fats, sugars, mineral foods, condiments. Tests for starches, sugars, proteids. Evaporation tests for per cent of water in a few common foods.

DIGESTION OF FOODS.

Kinds of glands, their structure in general, kinds of, locations in the body. Salivary digestion and mastication; gastric digestion; intestinal digestion; description of the different digestive organs; experimental demonstration of the action on different kinds of foods by the saliva, the gastric juice, the pancreatic juices. Demonstra-

tion of emulsions and study into the purposes of emulsions in the food in the intestine; study of bile and its economy; absorption of foods and their selective reception into blood vessels and lacteals; laboratory explanation of absorption by experiment in osmosis; portal circulation and the storing of glycogen in the liver; the lacteal-lymphatic conveyance of the digested food; effects of alcohol and of narcotics on food digestion.

RESPIRATION.

Composition of air; laboratory demonstration of oxygen, carbonic acid gas, and nitrogen; nature of oxidation and combustion; need of oxygen therefore, to the body; function of nitrogen; sources of carbonic acid gas in the body; how plants give off oxygen and use up carbonic acid gas, while animals reverse the act; how oxygen is given up and carbonic acid gas taken up by the action of the lungs; why we breathe, therefore, and how we breathe; description of the respiratory organs; demonstration of the respiratory organs with those of sheep, pig, cat, or rabbit.

CIRCULATION.

Economy of circulation of blood in the body; microscopic view of blood; microscopic examination of blood circulation in the web of a frog's foot; systematic, pulmonary, and cardiac circulations; study of the heart—dissect heart of beef, pig or sheep; structure, functions, and comparison of arteries and veins; capillaries; the pulse; composition and functions of the blood; relation of lymphatic circulation to the blood circulation; lymphatic glands and their functions.

EXCRETION.

The liver as an excretory organ; the kidneys, location, structure, and functions; ureters and bladder; the skin, its structure, and function as an excretory organ; intestinal excretion; the lungs as excretory organs. Laboratory demonstration of internal organs in the dissection of a cat or a rabbit by the instructor. Show peritoneum, omentum, mesentery and mesenteric circulation, with portal vein; liver, gall cyst with duct; pancreas and duct; spleen; stomach; small intestine; large intestine, with caecum and veriform appendix; remove the false impression in the child's mind that the pyloris is a "gate"; kidneys, ureters, bladder; diaphram; trachea and lungs (inflate), bronchi and bronchial tubes; aesophagus; heart and pericar-

dium; venae cavae; aorta; pulmonary artery and vein; subclavian arteries and veins; jugular veins; carotid arteries; interior of stomach.

NERVOUS SYSTEM.

Structure of a nerve and of a nerve ganglion, and primary functions of the same; the brain, its parts and functions thereof; localization of the brain functions; gray matter and white matter; pia mater, dura mater, arachnoid, and functions; ventricles and cerebral fluid, with functions; cranial nerves; spinal cord, with spinal nerves and functions of the same, and economy of spinal cord; afferent and efferent, motor and sensory nerves; reflex action and its economy; the "sympathetic nervous system," its functions, and articulation with the cerebro-spinal system. Spinal nerves may be nicely demonstrated in the frog. If possible, get brain of beef, sheep, pig or cat for class demonstration by the instructor. Spinal cord with roots of spinal nerves may be nicely shown in the cat or rabbit. Teach effects of alcohol or narcotics on nervous functioning in the body.

SPECIAL SENSES AND VOICE.

As taught in any of the usual elementary texts.

Hygiene of exercise, cheerfulness, hopefulness, clothing, ventilation, light, sunlight, proper care of voice, habits and their economy and danger.

No list of text books is submitted because it is thought that instructors will find for themselves the text that will best suit the school and pupils under their charge, and which best covers in a plain, elementary way, the scope of work required. A text replete with technical terminology in which it is found that the subject is treated in the college scope is to be rejected. The one that presents its work in terms readily comprehended by the representative high school pupil; that treats the subject from the viewpoint of the pupil's home life, school life, outdoor life; that contains good, clear illustrations; that is up to date in matter and not excessively exhaustive in treatment; gives plain directions for well chosen and simple experimental work—such text is worthy of careful consideration.

XXXII. METEOROLOGY.

HALF YEAR.

Waldo's Elementary Meteorology shows the scope of the work required in this subject. The course in physical geography includes a

treatment of meteorology, and a pupil who has credit in one of these subjects cannot receive it in the other. Moreover, if the class are taking meteorology as a separate semester study the teacher must give a much more comprehensive treatment of the subject than she would give in physical geography where it forms but a part of the semester's course.

XXXIII. PHYSICAL GEOGRAPHY.

HALF YEAR.

The time to be devoted to physical geography is one semester of at least eighteen weeks; the usual rcitation period five days a week for class room work and a double period once a week for laboratory exercises. Within the past few years a lively interest has been taken in preparing text books on this subject and, therefore, a good up to date text book may be and should be selected and used.

Many of the texts will present more topics than it is intended to treat in the time assigned. It will be necessary, therefore, to select representative topics sufficient in number to make a thorough course for a half year. Besides text-books, reference books, relief maps, charts, globes, and other pieces of apparatus will be needed.

A permanent notebook of the laboratory exercises should be made and preserved.

Following are a few topics taken from Document No. 30, college entrance examination board, which suggests the line of work; others may be added:

1. The earth as a globe; shape, how proved, consequences; size, how measured; motion, character of latitude, longitude, time, rate, path, direction, consequences; magnetism, compass, poles, variation.

Laboratory exercises: (1) Construct a diagram showing inclination of earth's axis, and effects of an axix at right angles and parallel to plane of orbit. (2) Construct a diagram showing position of earth, moon, sun at the several phases of the moon.

2. The Ocean: Form, divisions, depth, density, temperature, ocean floor, distribution of life, waves, currents, work of ocean, classes of shore lines, and importance of shore lines.

Laboratory exercises: (1) Study of ocean current maps. (2) Study of types of shore line. (3) Make map of selected steamer routes across the Atlantic and Pacific and explain why the routes are selected.

3. The atmosphere: Composition and offices of instruments used in study of; temperature, source and variation of, isothermal charts, etc.; pressure, measurement of, relation to temperature, study of isobars on U. S. weather map, etc.; circulation, winds, classes, direction, causes, effects; moisture, source, forms, measurement, precipitation; storms.

Laboratory exercises: (1) Determination of altitude of hill by barometer. (2) Determination of dew point. (3) Location and migration of heat equator. (4) Make complete weather maps from furnished data.

4. The land: Plains, plateaus, mountains, volcanoes, rivers, glaciers and sub-topics in each case; erosian.

Laboratory exercises: (1) Comparison of areas to scale. (2) Make vertical section of relief maps to scale. (3) Write description of models. (4) Make drainage map of United States. (5) Two excursions in autumn and two excursions in spring, described in detail.

This list of topics covers the class room work in general, but not in detail. To each class of laboratory exercises others should be added. The notebooks should be neat and their contents logical and accurate. These books may be called for by the examiner as a part of the examination. More time should be given to the fourth general topic than to either of the other three.

A series of weather maps will be very helpful. These may be secured from the division chief of the U. S. weather bureau at Minneapolis.

It is hardly possible to lay too much emphasis on the importance of map study in connection with this work. For this purpose the topographic maps issued by the United States geological survey will be found very serviceable. They cost 5 cents apiece or $2 a hundred. Lists of such maps are usually given in the text books on physical geography, and the pamphlet on "The Use of Government Maps in Schools," published by Henry Holt & Co., also gives lists of the many excellent maps issued by the government, with suggestions for their use. On the topographic maps of the United States geological survey the forms of the land service are represented by means of contour lines or lines passing through points having the same elevation. Beginning with maps which show simple forms, the student should learn to interpret these and tell what features are represented by the contour lines. Care should be taken that the sheet chosen on

any particular day should furnish an example of the kind of land form then under consideration. If mountain ridges are being studied, for example, the Harrisburg, Pa., sheet may be shown.

XXXIV. ELEMENTARY GEOLOGY.

HALF YEAR.

The subject as usually treated in good text books of at least 400 octavo pages. The course should include: Dynamical geology, —both external and internal geological agencies of change; the structure and composition of the earth's crust including a knowledge of rocks, minerals and fossils; a survey of historical geology. Schools should not offer this course unless they are provided with a suitable museum, and classes should not take it up until they have reached their third or fourth high school year.

XXXV. BOTANY.

The time required for the course in botany is one year of at least thirty-six weeks. The regular recitation period, five or four times a week should be given to class room work and two or three double periods per week to laboratory exercises. The class-room and laboratory work should supplement each other in the treatment of each topic day after day. An up to date text-book should be selected and the students made thoroughly acquainted with it. The laboratory work must be emphasized. Simple dissecting microscopes, compound microscopes, at least one to every two pupils; fresh or preserved specimens; a few reagents, and dissecting needles and other accessories will be needed. Large distinct drawings on hard, smooth paper and with hard, sharp pencils must be preserved and, with carefully arranged notes and descriptions in ink, must be bound in a permanent notebook. The examiner may call for these books as part of the test for acceptance of the year's work.

A good assortment of apparatus is presented in the catalogues of:

E. Leitz, care Wm. Kraft, New York City.

Bausch and Lomb Optical Co., Rochester, N. Y.

The Central Scientific Co., Chicago, Ill., and others.

Some of the most suitable texts are:

Atkinson's Elementary Botany, Henry Holt & Co.

Coulter's El. Botany for Secondary Schools, published by Appletons.

Campbell's Elements of Structural and Systematic Botany, published by Ginn & Co.

Bergen's Foundations of Botany, published by Ginn & Co.

Some suitable texts for reference are:

A Text Book of Botany, Strasburger, Noll, Schenk and Schimper, translated by Porter, published by Macmillan Co.

Gray's different texts, published by American Book Co.

Kerner & Oliver, Vols. 1 and 2, published by Macmillan Co.

The University Text Book of Botany, Campbell, published by Macmillan Co.

Leavitt's Outline of Botany, published by American Book Co.

The old "census taking" conception of botany which simply comprises a study of dead plants, in order that the pupil might finally identify their characters and run them into their properly classified stalls, has been supplanted by the desire to know what plants *are* and what they *do*.

To lead pupils into this newer field of botany it is helpful to treat plants as organisms that pass through a definite cycle of existence. While the green plant goes through this circle of its life it absorbs water and gases; it respires, as do all living things; it uses the heat and chemical energy of the sun to manufacture its complex food from simple chemical compounds, and in this respect is different from colorless plants and animals, and by reason of this ability, stands between living and lifeless matter. Every plant, whether simple or complex, should be studied, if possible, in its native condition. It should be studied alive, if possible, or in well preserved material.

Algal material can be gotten from ditches, ponds and coulees. The fungi are present in dark, damp places, especially in the woods. The mosses and ferns and flowering plants are found in all kinds of habitat, and offer opportunity to study ecological conditions wherever found. Preserved botanical material may be secured from the Cambridge Botanical Supply Co., Cambridge, Mass., or Woods Hole Laboratory, Woods Hole, Mass.

The first two or three months, those of autumn, should be devoted to a general view of plant life,—the physiology of plants rather than their morphology and relationship. This can be done in these months because living specimens of algae, fungi, liverworts and angiosperms can be found with which to work.

TOPICS.

1. The Cell: Cytoplasm, nucleus, plasmic membrane, sap-cavity, wall.

2. The role of water in the plant: Osmos, path of transfer, transpiration, turgidity.

3. Photosynthesis: Function of chlorophyll, carbon dioxide, evolution of oxygen.

4. Respiration: Necessity of oxygen in growth, evolution of carbon dioxide.

5. Digestion: Digestion of starch with diastase and its role in the translocation of foods.

6. Irritability: Geotropism, heliotropism and hydrotropism.

7. Growth: Germination of seeds.

During these first months should be laid also the foundations for the study of ecology, or the relations of plants to their environment.

The four winter months should be given to a careful study of *one* to *three type forms* of the sub-classes of algae, fungi, liverworts and mosses, pteridophytes, gymnosperms and aungiosperms. Study their morphology, reproduction and other physiological processes, and their relation to each other.

Toronomy: This work should result in a good understanding of alternation of generations, of a seed, a spore, and tissues of the root and shoot. Space will not permit further details, but the right text-book will give them. To do this work preserved material will be necessary. This work must be planned months before and the material should be at hand. The instructor, to be successful, must see that the laboratory work is done carefully and that the student draws what he sees, and that only.

The last two months should be devoted to the study of roots and shoots and metamorphosed forms of these, flowers and fruits. A thorough review of the physiology outlined above, and ecology. This last will be incomplete without at least a few field excursions.

XXXVI. ZOOLOGY.

If the year of biological work is given to a study of zoology the suggestions regarding the study of plants are applicable to the laboratory work, note books, field excursions and the general study of life cycles of animals.

The invertebrate forms should be studied during the first half of the year, and the vertebrate forms during the last half of the course. Each group of animals ought to furnish at least one typical subject in order to present the facts upon which the laws of evolution are founded. The object of the year's work in biology, whether it be

occupied with the study of plants or animals, should be to secure some understanding of the laws which control the operations of living matter.

Material can be gotten from everywhere about the homes of the pupils. The woods, meadows and streams will furnish great variety of animal forms. Preserved material can be gotten from Woods Hole Laboratory, Woods Hole, Mass.

The text-books recommended for the year's work in zoology are:

Bumpus' Invertebrate Zoology, published by Holt & Co.

Merrill's Studies in Zoology, published by American Book Co.

Marshall and Hurst's Practical Zoology, published by Putnam & Sons.

Invertebrate Zoology, Pratt. Ginn & Co.

Several excellent texts published by Macmillan Co., Holt & Co., and by American Book Co. Jordan & Kellogg's texts, published by Appletons, are especially commended for reference.

XXXVII. CHEMISTRY.

The course in general chemistry extends through the year, two or three days a week being given to laboratory work and the other days to recitations. It is desirable to have a double period for the laboratory, but if it is not possible to make a daily program that will secure this arrangement, then the subject may be placed at the end of the session so that, when necessary, the pupils may remain a few minutes after the close of the school to finish their experiment. A large proportion of the experiments in elementary chemistry can be performed in forty minutes if the class find everything in readiness when they enter the laboratory.

The work covered should be about equivalent to Remsen's Introduction to the Study of Chemistry or Williams' Elements of Chemistry, omitting some of the treatment of chemical theories. If the subject is given as early as the second high school year and a briefer text is desired, then one of the scope of Remsen's Elements of Chemistry will answer the purpose if supplemented with a larger book. There should, of course, be on hand, for reference, a few standard books that treat various phases of the subject more comprehensively than the text book can do.

The emphasis should be laid upon the properties of the elements and their chief compounds, especially those of most common occurrence and general use. This, of course, includes the chemical

action of elements and compounds. Chemical theories should be treated only in a subordinate way.

A laboratory manual should be used giving detailed directions for experiments. Neat and accurate statements of all experiments should be recorded, either in separate note books or in the manual if that provides space for the purpose. By this means systematic habits of work and accuracy in observation and induction should be cultivated. The examiner reserves the right to require that these note books be sent to him together with the student's examination papers.

The laboratory work of the class should be supplemented by numerous experiments performed by the teacher with the assistance of a few of the members.

An equipment for an elementary course in chemistry is comparatively inexpensive, costing much less than a similar equipment for the subject of physics. It is desirable to have the laboratory supplied with gas and flowing water, but in their absence alcohol burners and a convenient water tank will enable a competent teacher to give a very profitable course in this subject.

XXXVIII. PEDAGOGY.

FIRST SEMESTER,—ELEMENTARY PSYCHOLOGY.

This part of the course deals, in an elementary way, with the facts and theories of general psychology. Its aim is to introduce the student to a study of his own mental states as a preparation for the sympathetic and intelligent observation and direction of the lives of others. The following texts give such a treatment as is contemplated:

Essentials of Psychology, C. S. Buell, published by Ginn & Co.

Psychology and Psychic Culture, Halleck.

SECOND SEMESTER,—SCHOOL MANAGEMENT AND SPECIAL METHODS.

A discussion of the common problems of school management and of rational methods of teaching the various subjects found in elementary school programs. The class should, under the direction of the teacher, make frequent visits to the grade rooms to observe how the methods under discussion are put into actual operation. Students should make full reports of such visits. The observation work should be made an important feature during this semester.

Seeley's New School Management, published by Hinds and Noble, and White's Art of Teaching, published by the American Book Co.,

are recommended. The class should study the larger portion of both books, and they should also read some of the inspiring chapters of Page's Theory and Practice of Teaching.

XXXIX. SENIOR ARITHMETIC.

HALF YEAR.

The aim of the study of arithmetic in the senior (or fourth) year of the high school should be more than a mere review. In fact this is only incidental. The two chief aims should be: (1) The more comprehensive and intensive study of all the pivotal situations in arithmetic, laying stress not on the mere *how*, but on the *why* of every process. The pupil should have, after this semester's work, an "easy mind" in arithmetic. This, in itself, would give a tone and sense of mastery that would be truly educative. (2) As probably most of those who should take this elective subject would have teaching in view, the instructor should constantly bring to the minds of his class the best ways and means of presenting to pupils the subject matter of arithmetic in detail.

The subject should be taught with a text or by carefully selecting from any sources types of problems for solution, such as would awaken and arouse interest, enthusiasm and discussion, and such as would be at the same time along modern and practical lines. The types should be variously applied. The picturing power should be put to the test whenever possible. Accuracy, neatness and rapidity should be aimed at as results.

The whole subject matter of arithmetic should be gone over in *types*—the nature and working of the decimal Arabic system; a discussion and translation of other systems; the how and why of addition; the three methods of subtraction; why a partial product is begun under the figure of the multiplier used; why the multiplier must be abstract; the why of long division; divisibility by 2, 3, 4, 5, 6, 8, 9, 11; the different presentations of G. C. D. including the why of the Euclidian method; the why of L. C. M.; the different conceptions of a fraction; the why in addition, subtraction, multiplication and division of fractions; the necessity of keeping in mind the *unit* of the fraction; the similarity of decimal fractions and decimal whole numbers; the how and why of changing common to decimal fractions; the why of pointing off in multiplication and division of decimal fractions; the origin of a gallon and bushel, showing their contents; an illustration and explanation of the area of a rectangle, tri-

angle, circle, trapezoid, etc.; carpet problems, lumber problems, etc.; the changing of avoirdupoise to troy, etc.; simple demonstrations of the fact that the square on the hypothenuse is equal to the sum of the squares on the other two sides; square root; the how and why of changing from one thermometric scale to another; the principles underlying longitude and time; the showing that fractions, decimals and percentage are one in substance but different in form merely—securing proficiency in translation; simple, annual and compound interest; the problems arising from the relation of principal and agent—buying problems, selling problems and collecting problems; taxes, insurance, stocks and bonds; proportion by cause and effect; the metric system, showing the relation between length, weight, and capacity; cube root with blocks; and progressions.

If a text be preferred to choosing and making problems, Lyman's Advanced Arithmetic or Beman and Smith's Higher Arithmetic, published respectively by the American Book Co. and Ginn & Co., cover the ground.

XL. SENIOR GRAMMAR.

HALF YEAR.

The aims of senior grammar are similar to those of senior arithmetic, viz.: Comprehensive and intensive study of the subject for such a mastery as was impossible four years before, and also the phase of the subject needed by the prospective teacher in presenting it to his classes.

If the teacher be masterful and independent of any particular book, it would be profitable to spend the semester on work devised or chosen from various sources, and then, under the direction of the teacher have the pupils investigate the assigned lesson in various texts kept on the shelves or in those in their own possession. This would give rise to differences of view and, with the skillful teacher, to reconciliation later on. As in arithmetic, every topic in grammar should be investigated, but the fundamental principles should not be lost sight of in discussions over minor and merely *formal* details. Grammar should be built up, or developed as other sciences in accordance with inductive procedure—examining and classifying material as in chemistry or botany. It is a *thought* subject *par excellence*. The emphasis should, of course, be laid on the *sentence* analyzed into its various parts, and on the kinds and relations of these parts.

If a text be desired as a basis for working out the subject, we would name Wisely's new English Grammar (Atkinson, Mentzer & Grover, Chicago).

XLI. VOCAL MUSIC.

ONE YEAR, THIRTY MINUTES A DAY, ONE-HALF CREDIT.

Most of the time devoted to this course should be given to chorus practice upon choice compositions that will cultivate a taste for good music and, as far as possible, the ability to sing. The material for this practice should also include our best patriotic songs, standard hymns, and favorite popular pieces. It is strongly urged that the school shall hold the students responsible for diligent application to this vocal work.

In the nature of the case, however, a written examination cannot give proper recognition to that part of the course. The examination of the high school board will confine itself to the elements of musical notation as indicated by the following topics:

1. Pitch of sound,—the scale, the flat, sharp and natural, the staff, clefs, keys and key-signatures.
2. Length or duration of sound,—the notes and rests of different lengths.
3. Time and time-signatures.
4. The other signs and terms commonly employed in musical notation to indicate the rate of speed, proper expression, etc.
5. Intervals,—harmonic and melodic, diatonic and chromatic, major and minor, etc.

XLII. DRAWING.

ONE YEAR. THIRTY TO FORTY-FIVE MINUTES A DAY. ONE-HALF CREDIT.

The requirement in drawing is based upon the statement of the entrance requirements in the subject as contained in the catalogs of colleges and universities represented in the college entrance examination board.

The time required for this subject is one year. While it is expected that the student will give as much time to this subject under the personal direction of the instructor, the usual recitation period, five days a week for at least thirty-six weeks, it is not expected to require more than one-half as much of the student's time as any other year-subject except vocal music, which takes the same time

as does drawing, therefore only half the credit will be given that is given for other year subjects.

The student should acquire the power to draw simple plane and solid geometric figures, and simple pieces of machinery, with a fair knowledge of the rules of perspective and light and shade as applied to freehand sketching and landscapes. He should be able to reproduce from the flat copy with enlargement or reduction of size. He should acquire the power to draw simple pieces of architectural ornament (a Greek anthemion, a design of iron scroll work, etc.). He should acquire the power to draw from the object still life, both animals and plants. Not over a tenth of the time should be put on water color work. Some real and careful work should be done on the history of art.

Every student must prepare and preserve a set of drawings. These should be made during the year and put into permanent form. They should be about twenty in number and may be called for by the examiner at the end of the course as part of the work required for the final test. When used for this purpose the instructor would have to certify that the drawings are the work of the student, as would be the case in handing in for credit the note books in physics, botany, zoology, physical geography or any such work.

These drawings should display the proficiency of the student in the following points:

1. The ability to sketch freehand from dictation with reasonable accuracy and with fairly correct, steady and clear lines, any simple geometrical figure or combinations of figures, straight lines, squares and circles, polygons, spirals or the like.

2. The ability to sketch from the object with reasonable correctness of proportion, structure and form, geometrical models, simple vases, simple details of machinery and buildings, or common objects, such as plans for houses and ordinary household furniture and utensils.

3. The ability to sketch from the copy, enlarging or reducing its dimensions, any simple object, such as a globe, valve, stopcock, or any ordinary historical ornament, such as an acanthus leaf, egg and dart ornament, anthemion, tile pattern, iron scroll work, or the like. One or two pieces in water colors, including a landscape.

Correctness of proportion and accuracy in the angles and curves and structural relations of the parts of every figure or object drawn are of the highest importance, and great care should be taken in

laying out the drawings in the use of construction lines and in the drawing of general masses and contour before the details are begun.

XLIII. AGRICULTURE.

Bailey's Principles of Agriculture will indicate the scope of the work required. If this is used as a text book it might be supplemented with Shepperd and McDowell's Elements of Agriculture and Goff and Mayne's First Principles of Agriculture. This course, however, if taken at all, should be more than the mere reading of text books. A large proportion of the subjects considered should be studied objectively in connection with that reading.

XLIV. MANUAL TRAINING.

No synopsis is given in this subject. Schools offering manual training may obtain information about the requirements by applying to the examiner of the high school board.

XLV. COMMON SCHOOL SUBJECTS.

The high school board offers examinations in arithmetic, English grammar, the history of the United States, geography, reading, spelling and penmanship. This examination is designed for pupils who have completed the eight grades of the common school course and desire to enter the high school. The examinations in arithmetic, grammar, history and geography will require no further comment than that they will cover the work that is usually done in these subjects in the grammar grades. Reading, spelling and penmanship will be treated in a single paper in accordance with the following plan:

The examination in reading will be based upon a portion of the literature that is read in the grammar grades of our schools, namely, upon:

Whittier's Snowbound.

Burroughs' Birds and Bees.

Irving's Sketch Book: Rip Van Winkle, Westminster Abbey, The Voyage, Legend of Sleepy Hollow.

Holmes' Grandmother's Story of the Battle of Bunker Hill, How the Old Horse Won the Bet, A Ballad of the Boston Tea Party, The Last Leaf, Old Ironsides, The Living Temple, The Chambered Nautilus.

Longfellow's Evangeline and The Courtship of Miles Standish.

The pupils' scholarship mark in spelling will be determined from his answer paper in the subject of reading; provided that the examiner may supplement this test with a list of words selected for the purpose from the literature named above, but no rare or unusual words shall be included in such list.

This answer paper will also serve as a specimen of the pupil's penmanship and will determine his grade in that subject.

In addition to studying the subject matter of what is read for the purpose of getting the author's meaning, pupils should give careful attention to distinct pronunciation and a pleasing and effective oral expression of the thought. This should constitute an important feature of all school work in reading, but in the nature of the case it is impossible to give it proper recognition in a written examination. It is therefore suggested that the superintendent of the school supplement the high school board examinatioen with an oral test that shall show the pupil's skill in the art of reading aloud.

IX. CREDIT GIVEN TOWARD TEACHER'S CERTIFICATES FOR HIGH SCHOOL WORK

The department of public instruction will accept the certificates issued by the high school board in lieu of an examination for a teacher's certificate in senior arithmetic, senior grammar, advanced United States history, commercial geography, physiology, pedagogy, elementary algebra, plane geometry, civil government, physical geography, physics and psychology, on the following terms or conditions:

1. The per cent of rating on the certificate must be eighty or more.

2. The certificate must not be more than two years old when presented for acceptance in lieu of an examination.

3. The applicant must have been sixteen years of age or more when he received the certificate.

4. The superintendent of public instruction reserves the right to refuse to allow credit for any of these certificates in lieu of an examination for a teacher's certificate for any reason that he may deem sufficient.

X. SUGGESTED COURSES FOR STATE HIGH SCHOOLS

Numerous requests have been made of the high school board to prepare courses which would be adaptable for use in the state high schools. The following are submitted for consideration. The board does not presume to say that these are the best or that any superintendent or principal could not make a course better suited to his particular needs. The courses may, however, be used as guides in determining what is required in a high school course:

THIRD CLASS HIGH SCHOOLS.

FIRST YEAR.

Latin Course—	*Scientific Course—*
Algebra.	Algebra.
Latin I.	Bookkeeping.
English I.	Commercial Law.
Drawing.	English I.
Music.	Physiology.
	Drawing.

SECOND YEAR.

Plane Geometry.	Plane Geometry.
Latin II.	Botany.
English II.	English II.
General History.	General History.

SECOND CLASS HIGH SCHOOLS.

FIRST YEAR.

Algebra.	Algebra.
Latin I.	Bookkeeping.
English I.	Commercial Law.
Music.	English I.
Drawing.	Music.
	Physiology.

SECOND YEAR.

Plane Geometry.	Plane Geometry.
Latin II.	Botany.
English II.	English II.
Ancient History.	Ancient History.

THIRD YEAR.

Latin Course—	*Scientific Course—*
Latin III.	Physical Geography.
Physics.	Drawing.
English III.	Physics.
Modern or English History.	English III.
	Modern or English History.

FIRST CLASS HIGH SCHOOLS.

FIRST YEAR.

Algebra.	Algebra.
Latin I.	Bookkeeping.
English I.	Commercial Law.
Music.	English I.
Drawing.	Music.
	Physiology.

SECOND YEAR.

Plane Geometry.	Plane Geometry.
Latin II.	Physical Geography.
English II.	Drawing.
Ancient History.	English II.
	Ancient History.

THIRD YEAR.

Latin III.	Higher Algebra and Solid Geometry.
Botany.	Chemistry.
English III.	English III.
Modern or English History.	Modern or English History.

FOURTH YEAR.

Latin IV.	Physics.
Physics.	English IV. or German II.
English IV.	Advanced U. S. History and Civics, or
Advanced American History. and Civics, or	Political Economy
Political Economy.	

XI. SALARIES

The wages ordinarily paid to teachers are entirely inadequate, considering the service which a good teacher is expected to render and the preparation which that teacher must have to render that service. The high school board, at the June meeting, 1904, passed the following resolution: That the board recommends that the salary of a superintendent of a first class high school be not less than $1,500 per annum; of a second class high school, not less than $1,200, and for a third class high school, not less than $1,000; further, that no high school assistant should receive less than $70 per month.

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